

A Database Publication

# electron

## user

Vol. 4 No. 8 May 1987 £1

How to write  
secret codes  
on your  
Electron

VOVXGILM  
HLOEEH  
HVXIVG XLWV

TOP  
SECRET



Create your own  
spelling checker

Explore the weird  
world of fractals

Have fun with  
two super games

Colourful, intelligent  
disc menu  
program



# DUNJUNZ



**Amazing all action 1-4 player option arcade adventure.**



Deep down under with 4 characters, 25 levels, treasure, weapons, spells, traps, teleporter, potions and armour – all with hot action! It's fast, furious, funny and really playable. You've never played anything like this on your BBC before.

It's Bug-Byte's Beeb game of the year.

Victory House, Leicester Place, London WC2H 7NB  
Telephone: 01-439 0666

**BBC B: £2.99**  
Now also available  
for the Electron



## News

All that's new in the ever expanding world of the Electron. **5**

## Disc Menu

This super utility will organise your discs and present you with a ready made menu at the touch of a key. **10**

## Showtime

Order your tickets here and make a date in your diary for the big show dedicated to Electron and BBC Micro users. **13**

## Software Surgery

Bring yourself up-to-date with the latest software for the Electron: An arcade adventure, two arcade classics and a sports simulation are reviewed this month. **16**

## Adventures

More tips, clues and magic spells from our resident wizard as he endeavours to help those stuck in faraway and long-forgotten lands. **20**

## Hectic Henry

Help Henry the Eighth escape from the maze in this fast action arcade game. Watch out for the monsters lurking behind the hedges in his garden - you'll need nimble fingers and fast reactions if you're to survive. **24**

## Graphics

The series for budding computer artists delves deeper into the PLOT and looks at the many variations of the Basic command. **29**

## Ten of the Best

This top selling compilation tape for the Electron has now reached volume four: An offer not to be missed. **31**

## Secret Codes

We show how you can scramble files to prevent unauthorised access. Now you can store that confidential information with confidence. **32**



Two short, yet most impressive listings from our clever readers. **35**

## Serious Software

Correct those spelling errors with this powerful spelling checker. **36**

## Hardware Review

Slogger's joystick interface for Plus 1 and Rombox owners is given a thorough workout. **39**

## Mandelbrot Set

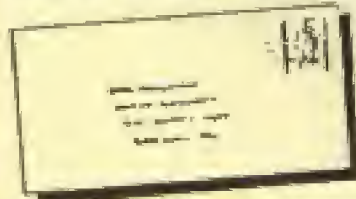
Explore the fascinating world of fractal geometry and create amazing screen displays. **41**

## Basics

This month our down-to-earth series for the novice programmer will drive you loopy! **44**

## Micro Messages

The pages you write yourselves. A selection from the many lively, interesting letters you've been sending us over the past few weeks. **47**



## Animals

Teach your Electron about the animal kingdom and see the look of surprise on your friends' faces as it holds a most intelligent conversation with them. **55**

## Hardware Projects

We show how you can use your Electron to measure both heat and light using your Plus 1's analogue to digital converter, a light dependent resistor and thermistor. **58**

## Bargains galore!

Don't miss our special offers on Pages 50-53.

## Published by Database Publications Ltd

Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Telephone: 061-456 8835 (Editorial) 061-456 8383 (Administration) 061-456 8500 (Advertising)

Subscriptions: 061-480 0171. Telecom Gold Mailbox: 72-MAG001. Postel: 61-456 8383.

Telex: 265871 MONREF G Quoting Ref: 72-MAG001

**ABC** 37,575 January-June 1986

**News trade distribution:**  
Diamond-Europress Sales and Distribution, Unit 1, Burgess Road, Ivyhouse Lane, Hastings, East Sussex TN35 4NR Tel: 0424 430422.

Printed by Carlisle Web Offset.

*Electron User is an independent publication. Acorn Computers Ltd, manufacturers of the Electron, are not responsible for any of the articles in this issue or for any of the opinions expressed.*

Electron User welcomes program listings and articles for publication. Material should be typed or computer-printed, and preferably double-spaced. Program listings should be accompanied by cassette tape or disc. Please enclose a stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication will be on an all-rights basis.

© 1987 Database Publications Ltd. No material may be reproduced in whole or in part without written permission. While every care is taken, the publishers cannot be held legally responsible for any errors in articles or listings.

Managing Editor  
Derek Maskin

Features Editor  
Roland Waddilove

Production Editor  
Peter Glover

Art Editor  
Heather Sheldrick

Reviews Editor  
Chris Payne

Advertising Sales  
John Snowden

Subscription rates for 12 issues, post free:

£12 UK & Eire (Sterling only)  
£20 Europe  
£35 Overseas



# A New Experience for Electron Users



# THE LOST CRYSTAL

*A full-scale GRAPHIC adventure*

## MORE THAN AN ADVENTURE...

This exciting game has been specially designed to be played either as a true puzzle adventure or, by using the help book provided, as a piece of interactive fiction that can be enjoyed by complete beginners.

The Rainbow Crystal, which has protected the people of Zaloria for many years, has been shattered into seven pieces by a mysterious bolt of lightning. Your task is to seek out the missing pieces and find a way to re-create the magical Rainbow Crystal.

Choose your friends wisely and enlist their help to outwit the villains, fight the monsters and uncover the secrets of the mystical characters.

Only when the Crystal is complete once more will peace be restored to the Free Lands.



Each Game Contains 2 Cassette Tapes, Instruction Book & Help Book



THE LOST CRYSTAL is EPIC's successor to The Wheel of Fortune which has dominated the Electron User adventure charts for the past two years. Written by the same author, it includes the following advanced features:

- ★ 400 locations, each one depicted in high-resolution graphics.
- ★ Intelligent moving characters with whom you may communicate and interact.
- ★ Advanced language and speech interpreters capable of accepting complex commands in plain English.
- ★ Fast position-save to tape or memory.
- ★ No frustrating mazes or illogical puzzles.

**SPECIAL INTRODUCTORY OFFER ONLY**

**£9.95**

Plus 70p  
POSTAGE and  
PACKING

## HOW TO ORDER

Send either a cheque or postal order for £10.65 to the address below. Please make cheques payable to EPIC SOFTWARE. You can also order The Lost Crystal from your local Post Office by asking for a TRANSCASH form and quoting our National Girobank number 45-306-4000. The Post Office will do the rest.

**ALL ORDERS DESPATCHED WITHIN 24 HOURS**

**DEALER ENQUIRIES WELCOME**

**EPIC SOFTWARE, Dept E5, 10 Gladstone Street, Kibworth Beauchamp, Leicester LE8 0HL**



## Makers struggle to meet demand

**BOOMING** demand for Electron add-ons is causing production problems for manufacturers.

One leading supplier has had to relocate its production lines to the Channel Islands in order to cope with orders from Electron users eager to upgrade their machines.

Gillingham-based Slogger provides a range of Electron enhancements, including the Master Ram Board and Rombox Plus.

It is one of several companies which has been working overtime to fill a flood of orders from the increasingly sophisticated Electron user base.

The crunch for Slogger came at Christmas when, despite help from other local manufacturing firms, production of Rombox Plus couldn't meet the demand.

Now the device, launched

### ***As Electron users upgrade machines***

last July to fill the gap left by Acorn's withdrawal of the Plus 1, is being made in Guernsey – along with other Slogger hardware.

"This is the only way we can guarantee sufficient quantities to meet the market demand", Slogger director Adrian Kearney told *Electron User*.

"The Electron market is so buoyant we have acquired a stock of 2,000 machines ourselves, and foresee no problems finding homes for

them. We are looking at eventually manufacturing all our products in Guernsey, which is becoming a major centre for high tech.

"Manufacturing costs there are very competitive, which will have the effect of helping to keep our prices down.

"And it will enable our Gillingham workforce to spend more time developing new and better products for the Electron".

### ***Music maestro, please***

COMPUTER music maestro Mike Beecher will be centre stage at the forthcoming Electron and BBC Micro User Show in London.

Beecher, whose company Electromusic Research specialises in Midi interfaces and music software, will present a series of demonstrations on stage at the New Horticulture Hall, Westminster during the three-day show.

The company could be springing a surprise soon. He revealed that on the agenda of talks with Acorn will be the possibility of converting some of his programs for the Electron.

Many of the exhibitors who had such a successful show in Manchester in the spring will be at the London show which runs from May 8-10.

A money-saving advanced ticket order form appears on Page 53 of this issue.

## Contest sparks bright ideas

**ELECTRON** comms enthusiasts may soon be able to access Prestel's 300,000 page database through MicroLink.

British Telecom is merging the messaging services of Prestel and Telecom Gold, with which MicroLink is associated.

This will immediately create a 130,000 user base of micro owners able to exchange messages with each other.

SO many people entered the second part of *Electron User's* double competition in March that the process of selecting the winners is still proceeding.

More than 1,000 readers contributed to a bumper postbag for Electron hardware and software producer Advanced Computer Products which donated the prizes, worth more than £500.

Winners of part one of the contest – a five question computer quiz – were

announced in last month's *Electron User*.

But this left about 800 entries for the second half of the competition in which readers were asked to suggest new APC products for the Electron.

Boss of APC John Huddleston, told *Electron User*: "We have been overwhelmed by the response, and that is why it is taking us so long to decide on the winners.

"It would be easy to put all the entries in a hat and

just pull out three of them. But we are treating the competition very seriously – not least because we have been tremendously impressed by the quality of the entries.

"So before we decide who gets the prizes we want to take a long hard look at all the suggestions for new products.

"We're determined, however, to end the suspense and announce the winners in next month's *Electron User*".



# PLUS 1 RUSH FOR THE SHOW

PLUS Ones for the Electron were still being manufactured for sale at the last Electron and BBC Micro User Show long after the doors were opened.

Advanced Computer Products' John Huddleston explained that their production centre had been producing Plus Ones on the Thursday, Friday and Saturday. They were then sent up to Manchester for sale the next day.

The company had only five weeks from signing the deal with Acorn to produce the Plus Ones for the show, but they were determined to get

them there.

A.C.P. also had great success with the 32k advanced battery-backed ram.

"They sold so well I haven't got one left for myself", said Huddleston.

This was just one of the many success stories from this first ever spring Electron and Micro User Show in Manchester.

A record attendance of more than 10,000 people and bumper sales left happy exhibitors with lots of positive leads. Many sold out of special show bargains.

Spurred by the success of

the autumn show, organisers Database decided to move the 1987 date forward. But the success of the spring show surprised even them.

It was an eye-opener for one company which went away vowing to pay more attention to the Electron.

Dataphone was so impressed by the number of disappointed Electron users' enquiries about their products that, said a spokesman: "We really should try to see if we can put something together for the Electron".

And the Electron showed its popularity at the Database Publications stand.

A special offer on back issues of the *Electron User* "did a bomb" according to a salesman.

Viglen, the add-on manufacturer, reported that it had a very good show, with excellent customer response to all its products.

Norwich Computer Services could hardly keep up with demand on the first day, selling out of "show specials" very quickly.

A free draw for a Microvitec Minerva run by Centec attracted more than 3,000 entries. The winner was Steven Askey of Cocker-mouth, Cumbria.



The Micro Live team Ian McNaught-Davis, Lesley Judd and Fred Harris

## Save Micro Live from death

TELEVISION's only regular computer programme, Micro Live, faces the axe.

But Database Publications, prompted by hosts of letters from readers, is determined to ensure the axe will not fall.

The last Micro Live in the present series was scheduled for the end of March, Head of Continuing Education (Television) at the BBC David Hargreaves said: "The present season of Micro Live is its third. We have decided not to plan a fourth for next winter.

"We want to pause, take stock and think about how we ought to be making the best contribution to our understanding of information technology in the future.

Derek Meakin, head of Database Publications, said: "Micro Live has played a leading role in introducing

the delights of computing to an ever-growing audience.

"To kill the series now, when so many exciting developments are taking place in the whole world of microcomputing, is a retrograde step".

Programme director David Allen said he appreciated Database's concern. "It is a very important area which needs to have continuing exposure on television.

"There is a job to be done in keeping the subject in the general public's eye because it is important for the community and consumer in so many ways".

So, *Electron User* readers, it's time to play your part.

If you want to help save Micro Live, write to: The Controller, BBC 2, TV Centre, Wood Lane, London W12.

## Games update

NEW for the Electron is an arcade shoot-out from Grem-lin Graphics.

West Bank is set in Soft City, a Wild West town. Players must collect money from the citizens and shoot the baddies who try to steal it en route to the bank. Price £4.99.

\*\*\*

AWARD-winning arcade adventure Starquake has been launched for the Electron by Bubble Bus Software.

The game features 500 screens. Players control Blob who must scour the caves of an alien planet and amass various items.

The planet's core must be found and filled with the right products in order to stabilise it.

\*\*\*

AN Electron version of its bestselling game Dunjonz has been released by Bug Byte.

Players take on the role of a ranger, wizard, barbarian or warrior and work through 25 levels to recover the chalice stolen by the Lord of Darkness. Price £2.99.

\*\*\*

A TRILOGY for the Electron based on the Ket range of adventures has been launched by Incentive Software.

The package incorporates three adventures, Mountains



of Ket, Temple of Vran and the Final Mission.

Players must overcome Vran Verusbel and High Priestess Delphia in a bid to combat attacks on the mountains of Ket. Price £9.95.

*TIPS for aspiring programming stars have been collected into a handbook by software house Superior as part of a spring campaign to recruit writers.*

*To coincide with the book's launch the company has released the first in a range of Superior Collections for the Electron containing seven hits and one new title.*

*The compilation features Synchron, Repton, Repton 2, Karate Combat, Deathstar, Mr Wiz, Smash and Grab and Overdrive. Price £9.95 on tape, £14.95 on disc.*



# ACORN<sup>SOFT</sup> ELECTRON BONANZA

## AMAZING OFFERS

**VIEW**

WORDPROCESSING  
CARTRIDGE

~~£29.95~~ **£14.95**

**VIEW  
SHEET**

SPREAD SHEET  
CARTRIDGE

~~£29.95~~ **£14.95**

**PLUS I's**

now in stock

~~£59.95~~

**£49.95**

**SPECIAL  
OFFER**

Buy all 3 for only

**£69.95**

### PRIMARY EDUCATION

Sentence Sequence ~~£6.99~~  
Word Sequence ~~£6.99~~  
Snapper ~~£6.99~~  
Boxer ~~£6.99~~  
Talk Back ~~£6.99~~  
Workshop ~~£6.99~~

### HOME INTEREST BUSINESS

Business Games ~~£6.99~~  
Desk Diary ~~£6.99~~  
Graphs & Charts ~~£6.99~~  
Theatre Quiz ~~£14.95~~  
Watch Your Weight ~~£6.99~~  
The Complete Cocktail Maker ~~£6.99~~

● **ANY FIVE FOR ONLY £7.95**

### NEW

### AT LAST

**Electron Games Cartridges!!**

Plus 1 Compatible

3 Games on one cartridge for only **£19.95**  
each

Games Cartridge I contains:

Stockcar, Cybertron Mission, Bumble Bee **£19.95**

Games Cartridge II

Killer Gorilla, The Mine, Positron **£19.95**

Games Cartridge III

Felix in the Factory, Invaders, Chess **£19.95**

## MICROPOWER GAMES

Felix in the Factory ~~£7.95~~  
Croaker\* ~~£7.95~~  
Bumble Bee\* ~~£7.95~~  
Gauntlet ~~£7.95~~  
Killer Gorilla\* ~~£7.95~~  
Rubble Trouble\* ~~£7.95~~  
Electron Invaders ~~£7.95~~  
Felix Fruit Monsters ~~£7.95~~  
Chess ~~£7.95~~  
Danger UXB ~~£7.95~~  
Frenzy ~~£7.95~~

Swoop\* ~~£7.95~~  
Jetpower Jack ~~£7.95~~  
Cybertron Mission ~~£7.95~~  
Galactic Commander ~~£7.95~~  
Moonraider ~~£7.95~~  
Bandits at 3 O'clock\* ~~£6.95~~  
Adventure ~~£7.95~~  
Swag ~~£6.95~~  
Escape from Moon Base\* ~~£7.95~~  
Ghouls\* ~~£7.95~~  
The Mine ~~£7.95~~

\* BBC Compatible

● **ANY FIVE FOR ONLY £7.95**

## NEW GAMES

Magic Sword  
Gyroscope  
Brian Jack  
Gis Burne's Castles  
Dennis through the looking Glass

Classic Adventures  
Hampstead  
Geoff Capes  
Music Quiz

**SPECIAL ONLY £1.50 EACH**  
BBC and Electron

### EDUCATION SPECIALS

Unikword German ~~£14.95~~  
Unikword Spanish ~~£14.95~~  
Unikword Italian ~~£14.95~~  
IDO ~~£12.65~~  
Maths 'O' Level I ~~£12.65~~

Maths 'O' Level II ~~£12.65~~  
Where? ~~£6.95~~  
Me & My Micro (Cass & Book) ~~£12.95~~  
Biology ~~£12.65~~  
English ~~£12.65~~

**BBC & ELECTRON AVAILABLE ANY TWO FOR £3.95**

### ELECTRON LANGUAGES

Lisp Cassette ~~£9.95~~ **£2.95**  
Turtle Graphics Cassette ~~£9.95~~ **£2.95**

**ELECTRON  
JOYSTICK INTERFACE**  
only **£14.95**

## ROM CARTRIDGES

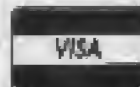
Logo Cartridge ~~£59.95~~ **£29.95**  
ISO Pascal Cartridge ~~£59.95~~ **£29.95**  
LISP Cartridge ~~£29.95~~ **£9.95**  
Starship Command ~~£14.95~~ **£2.95**

## ELITE

plus 3 Games disc  
Me and My Micro  
Book and cassette  
Advanced User Guide

~~£11.95~~ **£10.95**  
~~£19.95~~ **£9.95**  
~~£12.95~~ **£2.95**  
~~£9.95~~ **£2.95**

TEL



CHEQUES PAYABLE TO MICRO  
POWER GROUP DESPATCHED  
WITHIN 48 HRS. POSTAGE FREE  
V.A.T. ADDS 5%  
SEND YOUR ORDER TO:  
SOFTWARE BARGAINS, S.A.  
REGENT STREET, CHAPEL  
ALLERTON, LEEDS LS7 4PE  
DEALERS ENQUIRIES WELCOME  
TEL 0532 687735

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## SOFTWARE BARGAINS

A division of The Micropower Group  
Dept EM, 8.8A Regent Street, Chapel Allerton, Leeds LS7 4PE  
Tel: 0532-687735

Please make cheques/P.O.'s payable to  
Software Bargains.

PLEASE ADD 0.95p P&P



# Advanced Computer Products

## The Advanced Plus Four (A.P.4.)

- A FULLY ACORN COMPATIBLE disc I/Face for the 'ELK' & Plus 1
- Accepts any standard 5 1/4" or 3 1/2" disc drive with PSU
- Supplied with 1770 DFS (as supplied on the B+ & Master series) (A.E.D. is still available for Plus 3 users at £24.15 inc.)
- Page stays at &E00, the same as Tape F.S. NO LOSS of RAM
- Will allow more tape software to be run from disc
- Access compatible BBC disc-based software. No conversion program needed
- Extra sideways ROM socket fitted as standard
- A self-contained, well finished and fully tested product
- No 'short cuts' in design, finish or components
- ROM s/ware includes format, verify, free space and utils.
- Achieve greater BBC compatibility

£69.55 (+VAT)

"I can recommend it to anyone contemplating upgrading to disc".

Electron User, June '86

"The AP4 should be considered the standard interface for the Electron".

Acorn User, July '86

### AP4 SPECIAL PACKAGE PRICES

AP4 100 = AP4 + 5 1/4" 40 track S/S including PSU ..... £199.00

AP4 400 = AP4 + 5 1/4" track switchable D/S including PSU ..... £229.00

AP4 special package prices includes securecar delivery + VAT

## THE ADVANCED PLUS FOUR

"Disc drive compatibility at long last".  
ELECTRON USER, JUNE '86



93 10K Software Rom Adaptor For Acorn Computers

Advanced  
Rom II

Advanced  
Computer  
Products

1988 ACP Ltd. 6 Ave Road, High St. Chatham, Surrey

## THE ADVANCED ROM ADAPTOR II

### The Advanced ROM Adaptor II

Our versatile cartridge continues to grow in popularity and demand. This ROM/EPROM adaptor is a quality product fully enclosed in an Acorn approved casing, providing full protection for your valuable firmware! A.R.A. 2 not only allows 8K (2764) & 16K (27128) ROMS/EPROMS but also supports 27513 & 27011 devices (when used with the correct software) for which we are currently developing new products. Fully compatible with the Master Computer & Electron Plus I

## A.C.P. + Acorn = PLUS I

A.C.P. are proud to announce they are now producing the Acorn Plus I  
Introductory Price £49.95 inc VAT

# AMX MOUSE

## POINTS THE WAY FOR THE ELECTRON USER

### AMX MOUSE

Catch an incredible AMX MOUSE! The advanced opto-mechanical device that brings to your ELECTRON facilities once only available on more expensive computers. Now you can use ICONS, WINDOWS, AND POINTERS in your own programs.

### AMX PACKAGE

Plug the MOUSE into the user port, and the EPROM into your A.P.5. The latter contains fast machine code routines for creating on-screen windows, icons and pointers. And means that the MOUSE buttons can be programmed for use with commercial software such as Wordwise and View. There are two manuals included, explaining how to operate the MOUSE and the ROM routines, which are available in both basic and machine code programs.

Included in the package are two superb programs:

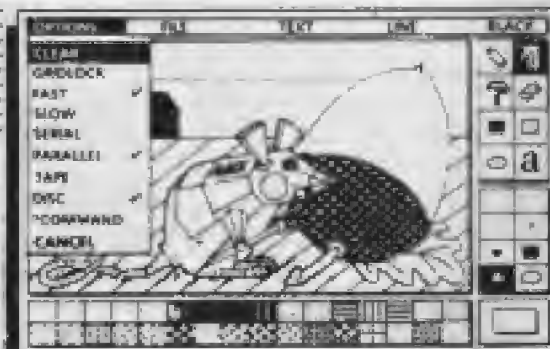
AMX ART has to be seen to be believed! It's a computer-aided drawing program that's just as good for serious applications - such as the preparation of detailed architectural and engineering drawings or teachers' worksheets - as it is for having lots of family fun! And if you're artistically inclined, you'll be astonished at the quality of work you can produce and save. It makes full use of on-screen menus, pull-down menus and icons: the ideal, easy way for novices to learn and gain in confidence.

ICON DESIGNER is an invaluable program for creating and storing icons for use in your OWN programs.

The ACP/AMX mouse package may be used on an ELECTRON fitted with a PLUS I & AP5. The 'ART' software is supplied on cassette but can be transferred to DISC (DFS not ADFS)

£69.95

MOUSE PACKAGE + AP5 £125.00



THIS IS WHAT ELECTRON USER SAID ABOUT A.P.5:-

"Looking at the A.P.5, shows it to be constructed to a high standard, it looks solid and robust. The A.P.5. Interface opens up the new Electron for a whole new type of computing." E.U Dec '86



**STOP PRESS**  
ACORN PLUS ONE now  
being produced by ACP

**NEW PRODUCT**  
Advanced Battery-backed RAM for Master and Electron users. A battery backed, 32K RAM cartridge, A.B.R. is a self-contained cartridge containing two 16K pages of sideways RAM with a re-chargeable battery back-up. Each 16K page can be individually locked by software. Supplied with full software support, to include loading software, ROM save, advanced print buffer and a disc utility MAKEROM. (08/M/E H) - £39.99

# Advanced Computer Products

The following ACP products:  
Advanced Disc Toolkit  
Advanced Disc Investigator  
Advanced ROM Manager  
Advanced 1770 DFS  
are all *compact* compatible

**ADVANCED DISC TOOLKIT**  
(01) /M/B/E/C      £34.60  
Any Acorn user including Master, BBC B+, Electron, DFS, 1770 DFS, ADFS, 2nd & co-processors A.C.P.'s BEST SELLING product containing over 30 commands inc.: - powerful memory & disc editor, search memory/disc/basic, catalogue/unplug ROMS, load/run programs below page, automatic menu, file transfer (inc. locked cassette files), ADFS utility etc. etc. ("It's superb" ... Database Pubs. - "A top-class toolkit - I have no hesitation in recommending it ... Acorn User Nov '86) (16K EPROM & FULL MANUAL)

**ADVANCED ROM ADAPTOR 2**  
(03) /M/E+1/      £14.95  
An Acorn approved cartridge containing a card with special 'zero' profile sockets that allow you to fit compatible 8K or 16K EPROMS/ROMS. The cartridge is fully enclosed providing complete protection for your ROMS. Simple to use - no switching - complies fully to the Acorn (sideways) Rom Filing System. A.R.A.2 contains 2 sockets. A single adaptor is also available. A.R.A.1 (02)/E/ £10.35 "The best ROM cartridge is by far the ACP ARA 2" ... A+B Dec 86

**ADVANCED SIDEWAYS RAM**  
(04) /E+1/      £28.90  
A highly versatile but simple to use s/w RAM cartridge that is automatically write protected on loading. Contains 16K RAM but can be switched (externally) to 2 X 8K RAM. Supplied with instructions & full software support (on cassette) to save ROM images to disc/tape, load RAM from file, Advanced Print Buffer & MakeRom a utility to merge several files from disc to be run from the ROM FS. (S/Ware on disc please add - £1 5% DFS £2 3% ADFS)

**ADVANCED ELECTRON DFS**  
(05) /E/      £24.15  
Electron & Plus 3 users - gain BBC compatibility by adding the Advanced Electron DFS (1770 DFS) this is the same disc filing system supplied with the BBC B+. Now you can produce and access (compatible) BBC disc based software. A.C.P. also supplies 5 1/2" disc drives to add to your Plus 3 (inc. 2nd drive adaptor). "ACP has produced another superb ROM for the Electron" ... Electron User Feb '86 (supplied on 16K EPROM + DFS MANUAL)

**ADVANCED DISC INVESTIGATOR**  
(06) /M/B/E/C      £28.75  
A very powerful Disc utility for standard & non-standard discs. Backup most protected discs; edit any type of non-standard disc; check & repair faulty tracks; create new disc formats; copy 40track discs to 80track discs; verify two non-standard discs. ("ADI features an extremely comprehensive sector editor; and one of the finest I've seen" Tubeline on Prestel) (supplied on 16K EPROM + manual)

**ADVANCED ROM MANAGER**  
(07)/M/B/E/C      "£14.95"  
A friendly utility for ROM & sideways RAM. Examine ROM/RAMs, load files into RAM, move memory to/from Sways ROM/RAM, catalogue/kill ROMS, offer commands to specific ROMS, save ROMs to disc/tape, AUTOROM a file (inc BASIC) to run from Sways ROM/RAM, execute specific machine code subroutine in a ROM, generate a ROM's checksum & CRC. "Represents amazing value for money. Go out and buy this real bargain" ... Dec 86 Database Publications. (supplied on EPROM + manual)

**ADVANCED PLUS 4**  
(08) /E + 1/      £79.98  
"DISC DRIVE COMPATIBILITY AT LONG LAST" (Electron User June '86) this sums up AP4 & ACP's approach to producing products. AP4 is a fully ACORN compatible disc iface & will accept any standard drive inc. PSU, runs 1770 DFS (as fitted in the B+ & Master), keeps page & Eee utils in ROM & provides a spare rom socket. "ACP's PLUS 4 comes out on top. I can recommend it to anyone." (E.U. June 86)  
AP4 should be considered the standard interface for the Electron (AU July '86)  
AP4 100      £199.00 (inc VAT & Securcor delivery)  
AP4 400      £299.00 (inc VAT & Securcor delivery)

**ADVANCED PLUS 5**  
(09)/E + 1/      £66.70  
A triple interface cartridge providing...  
1) a TUBE iface allowing a second processor to be connected, increasing BOTH speed & memory (PAGE & See HIMEM & See in all modes)  
2) a 1 MHz BUS for control applications & prommers  
3) the USER PORT for mouse and graphic devices  
Also contains 2/3 ROM sockets and on board operating software for 2nd processor

**ADVANCED 1770 DFS**  
3 versions ADM/C(11) - ADB(12)  
ADE (13)      £34.60  
ACP have totally re-written the Acorn 1770 DFS, enhancing existing features & adding new ones. The result is probably the fastest & most powerful disc filing system your computer could have. With the ability to operate in double density occupying both sides of a disc (640K). Automatic file relocation, improved file handling. 62 file catalogue and Sways RAM can be used as a fast RAM DISC. (16K EPROM + comprehensive manual)

**ADVANCED ELECTRON DFS Eee**  
(14) /E+ASR/      £19.99  
An alternative to our AED(05) for Plus 3 and ASR users. This optional alternative DFS is designed for use in Sideways RAM (ASR) and allows the user to operate a disc filing system & Eee when using the Plus 3 (in ADFS page would normally be & 1 Dae). The DFS is simply loaded using the software supplied with the ASR from disc. (optional upgrade for existing AED users £9.50 on return of original EPROM) (3 1/2" ADFS disc + manual)

"OTHER PRODUCTS & SPECIAL OFFERS"					
VIEW cartridge	(101) /E+1/	£ 12.95	3 1/2" discs in 1/box	(120) /M/B/E/	£24.00
Vsheet	(102) /E+1/	£ 12.95	5 1/4" discs ds/dd"	(121) /M/B/E/	£12.99
VIEW & SHEET	(119) /E+1/	£ 19.00	5 1/4" discs ss/sd	(122) /M/B/E/	£ 8.99
LISP cartridge	(103) /E+1/	£ 9.99	3 1/2" disc drives	(please call for price)	
E/Adv User Guide	(104) /E/	£ 3.95	5 1/4" disc drives	(please call for price)	
LOGO cartridge	(106) /E/	£ 29.95	2nd Drive Adaptor	(130) /E+3/	£ 7.95
PASCAL cartridge	(107) /E/	£ 29.95	Compact 2nd Drive Adaptor	(144)/C/	£14.95
VIEW pack BBC	(118) /B/	£ 49.00	3 1/2" library box 10	(124)	£ 2.95
AP4 100	(140) /E+1/	£199.00	16K EPROMS	(131)	£ 3.75
AP4 400	(141) /E+1/	£229.00	VIEWSTORE	(117) /M/B/(e)	£57.95
AP5 + MOUSE Package	(143) /E+1/	£125.00	VIEWPLOT	(142) /M/B	£26.95

Equipment codes /M/= Master /B/=BBC /E/=Electron /E+1/=Electron+Plus 1 /C/= Compact

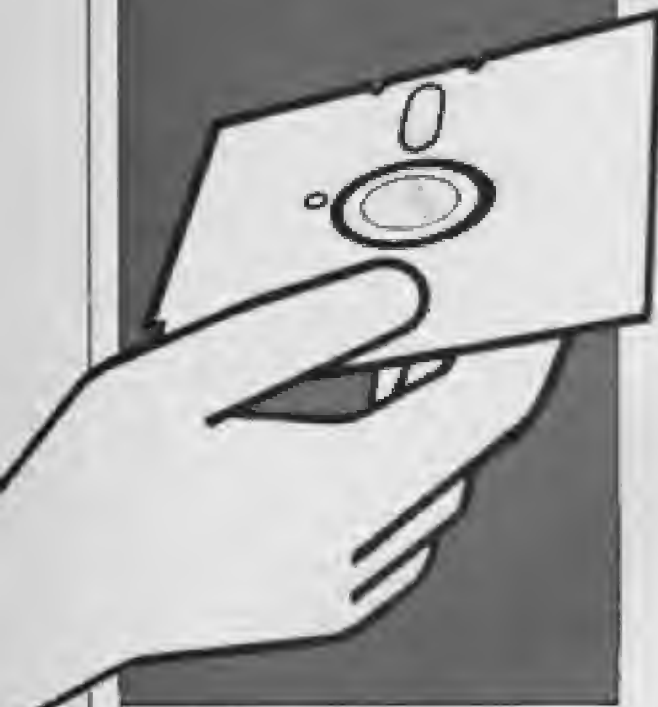
Please send order to:  
Advanced Computer Products Ltd  
6 Ave House, High Street,  
CHORHAM, Surrey, England  
GU24 8LZ Tel 0276 76545  
(mail order only)  
All our prices include  
UK delivery & VAT

NAME	PROD NO	PRODUCT	QTY	@	TOTAL
ADDRESS					
POSTCODE					
TEL.					

(in event of any query -  
please include your tel. no.)

CREDIT CARD No. I enclose payment for £. Exp date Ref 24





# Disc Menu can make program selection a snip

**STEVE TURNBULL** cooks up a tasty morsel

**CHOOSING** which program to run from your disc can be time consuming.

You have to type \*CAT and look through the program names. When you've made your choice you have to remember whether it's Basic or machine code.

Finally you have to CHAIN or \*RUN the program to start it. And if you realise that you've chosen the wrong one you have to go through the whole process again.

So why can't you have a program to do it all for you? Well now you can.

Disc Menu takes all the effort out of choosing your program. Once it is on your disc just CHAIN it to get a list of your programs on an easy-to-read menu and you can LOAD, CHAIN, \*LOAD or \*RUN whichever one you want.

The program works on almost any system - Plus 4 DFS, Plus 3 ADFS, Plus 3

DFS and the Cumana Disc Interface with Slogger's SEDFS.

You choose the program you want using the cursor keys and Return, then Menu checks to see if it is Basic, machine code, or perhaps just a text file, and gives you the choice of running or loading it.

Press just one key, and your chosen program is run or loaded ready for you to play or edit.

Type in Menu and save it on to a disc before trying to run it, as the little bit of machine code could wipe out the whole memory if you have made a typing error.

You are now ready to set up your discs. Make sure Menu is loaded into your Electron, put a disc into the drive and type:

```
*BUILD !Boot
CHAINMenu
```

and press the Escape key.

Now enter:

```
*OPT4,3
SAVE Menu
```

If you are using the Plus 3 ADFS you will have to copy BUILD from the Library on your Welcome disc on to the new disc first.

Repeat this procedure for every disc you want the Menu program on. When you want to use the disc press Shift+Break and the menu runs automatically.

Once you have the menu on screen you can type in a star command. Just press \* and then your command - not forgetting to press Return at the end.

You can insert a new disc - press N and follow the

instructions. If you want to choose a different drive or directory you can do this with a star command.

Use the cursor keys to highlight the file you wish to load and press Return. Menu checks whether the file is Basic, machine code or text and allows you to choose LOAD, CHAIN, \*LOAD or \*RUN (or no action) depending on the type of file.

If when using the ADFS you select a file name which is in fact a directory, the program moves down into the new directory and displays a new menu. To move back up you can use:

\*BACK

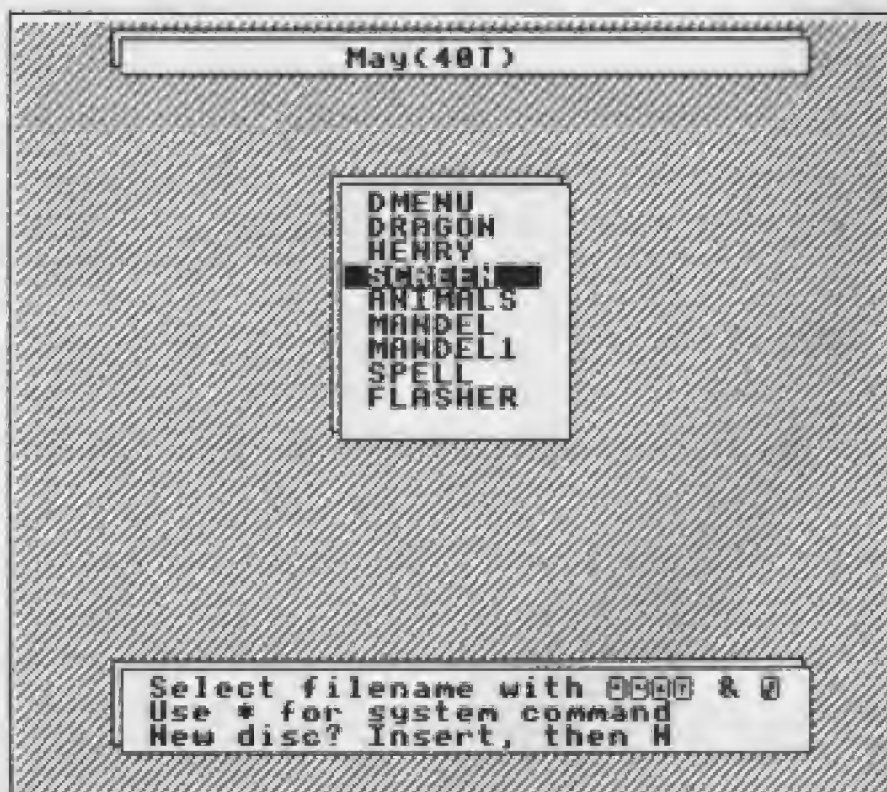


Figure 1: The main menu screen

Name	Parameters	Action
osargs	A=0 Y=0	Find identifying number of current filing system. DFS = 4 ADFS = 8
osgbpb	A=5 XY=address of data block A=8 XY=address of data block	Read title of disc
osfile	A=5 XY=address of data block	Read all filenames in current drive/directory Read information about particular file

Table 1: Filing system calls used in Disc Menu



The program works by reading the names of the files in the current drive and directory, using the standard filing system calls shown in Table I. The names appear on screen in a window.

When a file is selected the program goes back to the disc and finds out what the load and execution addresses are.

Using this information, it decides, in PROCfuzzy, whether the file is a Basic or a machine code program or a text file.

Choosing the file type uses a system called Fuzzy Logic. Normal logic just deals with things being true or false, and nothing in between: Fuzzy Logic involves some things being more likely or less likely than other things.

PROCfuzzy uses this system to decide the type of

the file you have chosen. It examines the load and execution addresses and changes the values of the variables *text*, *mcode* and *basic*.

For instance, if the execution address is between &8000 and &8100 it is more likely to be a Basic program than machine code or text. But a load and execution address being the same and less than &E00 means the file is more likely to be machine code than Basic.

A special check is made to see whether the file chosen is really an ADFS sub-catalogue.

When you have made your choice the program fills the keyboard buffer with the instructions needed to LOAD, CHAIN, \*LOAD or \*RUN the file and the menu program finishes.

Your Electron then processes the commands in

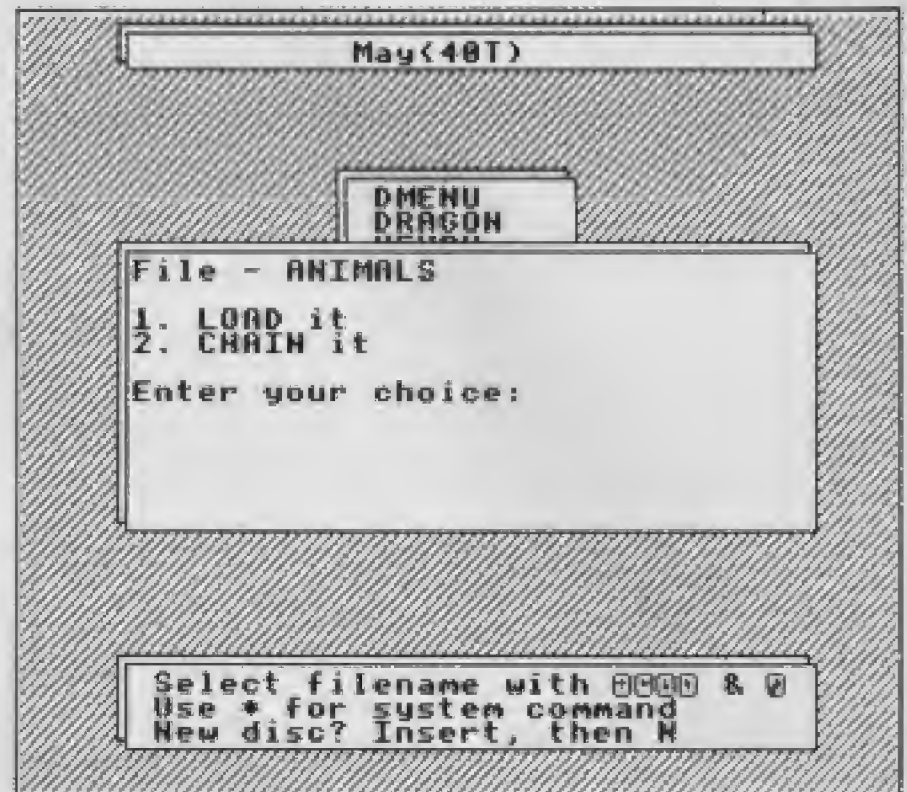


Figure 11: The loading options

the keyboard buffer just as if you had typed the commands in yourself.

And there you have it,

your discs get the professional look, and it is much easier for you to run your programs. ■

```

10 TS="Electron Disc Menu"
20 AS="S.D.Turnbull"
30 REM (c) Electron User
40 REM-----
50 MODE4:ON ERROR PROCe
60 PROCinit
70 PROCmode(6)
80 ON ERROR PROCerror
90 REPEAT
100 REPEAT
110 PROCread_disc
120 PROCmode(4)
130 PROCtitle(1)
140 PROCwindow(3)
150 PRINT "Select filename with
160 PRINT "Use * for system
170 PRINT "New disc? Insert,
180 PROCwindow(99)
190 FOR FX=0 TO 10
200 PROCfile_out(FX,bcol,fc
210 NEXT
220 IF files>files file=0
230 REPEAT *FX15
240 PROCfile_out(file,fc,b
250 CX=FNin(curs$+"Nn"+cr$)
260 PROCfile_out(file,bcol,f
270 IF CX<5 PROCmove
280 UNTIL CX>4
290 IF CX>5 IF CX<8 PROCnew
300 IF CX=5 PROCsystem
310 UNTIL CX=8
320 PROCrun(1$(file))
330 UNTIL okay
340 PROCquit:END
350 ---
360 DEF PROCerror
370 *D1R :0.5
380 IF ERR=17 ENDPROC
390 DEF PROCe
400 ON ERROR OFF
410 PROCquit
420 REPORT:PRINT at "ERL:E
430 ---
440 DEF PROCquit
450 PROCmode(6)
460 PROCcol(fcol,bcol):*FX4
470 PROCcon:ENDPROC
480 ---
490 DEF PROCcon
500 VDU23,1,1;0;0;0;:ENDPROC
510 ---
520 DEF PROCcoff
530 VDU23,1;0;0;0;:ENDPROC
540 ---
550 DEF PROCinit:*FX4,1
560 bcol=0:fc=1:bc=4:fc=3
570 mode=4:marfiles=31
580 DIM ctrl 32,data 512
590 DIM 1$(marfiles),op$(2)
600 osgbpb=&FFD1:osfile=&FFD
610 osargs=&FFDA:osword=&FFF
620 dis=4:adte=0:file=0
630 sp$=" ":cr$=CHR$13
640 width=10:length=11
650 VDU&F17;&827C;&8A92;&92
92;&7C82;
660 VDU&E17;&827C;&89292;&92
&A;&7C82;
670 VDU&F17;&827C;&8A92;&82
92;&7C82;

```

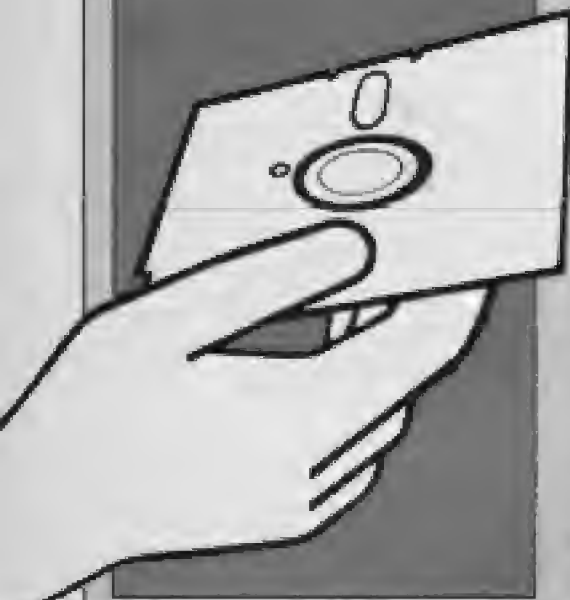
```

680 VDU&F17;&827C;&8A92;&82
92;&7C82;
690 VDU&F17;&827C;&8A9A;&F2
AA;&7C82;
700 VDU&FA17;&82211;&8844;&22
11;&8844;
710 ch$=CHR$252+CHR$253+CHR$
254+CHR$255+" & "+CHR$251
720 curs=CHR$888+CHR$889+CH
R$88A+CHR$88B
730 PROCasce:ENDPROC
740 ---
750 DEF PROCmode(MX)
760 LOCAL AX
770 VDU22,MX
780 PROCcoff
790 VDU19,bcol,bc;0;
800 VDU19,fc,fc;0;
810 PROCcol(fcol,bcol)
820 mode=MX
830 LX=0:BY=24
840 XX=39:YY=0
850 IF mode=4 BY=31
860 ENDPROC
870 ---
880 DEF PROCen(c$,YX)
890 LOCAL XZ
900 XZ=(RX-LX-LEN$)DIV2
910 PRINTTAB(XZ,YZ)ts;
920 ENDPROC
930 ---
940 DEF PROCany
950 LOCAL BX,FX,YX
960 BX=abc:FX=ofc
970 PROCcol(bcol,fc)
980 PROCen("Press any key",V
POS+3)
990 PROCcon:ZX=GET:PROCcoff
1000 PROCcol(FX,BX)
1010 ENDPROC
1020 ---
1030 DEF PROCcol(c$,dx)
1040 COLOUR CX
1050 COLOUR 128+dx
1060 ofc=cx:obc=dx
1070 ENDPROC
1080 ---
1090 DEF PROCch(ts)
1100 PROCfil(1&FA,0)
1110 PROCwindow(1)
1120 PROCch(ts,0)
1130 ENDPROC
1140 ---
1150 DEF FNin(k$)
1160 REPEAT
1170 IX=INSTR(k$,GET$)
1180 VDU -7*(IX=0)
1190 UNTIL IX<>0
1200 =IX
1210 ---
1220 DEF PROCread_disc
1230 PROCmode(6)
1240 PROC("Reading Disc")
1250 system=FNread.system
1260 title$=FNread.title
1270 PROCread_files
1280 ENDPROC
1290 ---
1300 DEF FNread.system
1310 LOCAL AX,XX,YX:XX=870
1320 =USR(osargs)AND&FF
1330 ---
1340 DEF FNread.title
1350 LOCAL OX,LX,t$
1360 OX=data
1370 ctrl=0
1380 ctrl=0
1390 ctrl=0

```



## Disc Menu listing



### From Page 11

```

1480 ctrl19=0
1490 AX=5
1500 XX=ctrl
1510 YX=X%01V256
1520 CALL osqbbp
1530 t5=""
1540 IF ?0X=0 ="No Title"
1550 FOR LX=1 TO ?0X
1560 IF ?0X=32 IF t5="" ELS
E t5=t5+CHR$(X%01V256)
1570 NEXT
1580 IF t5="" t5="No Title"
1590 t5=
1600 DEF PROCread_files
1610 LOCAL B%,FX,LX,IS
1620 B%=data
1630 FOR IX=0 TO 511 STEP4
1640 B%!(IX)=0:NEXT
1650 ctrl10=0
1660 ctrl11=0X
1670 ctrl15=maxfiles
1680 ctrl19=0
1690 AX=8
1700 XX=ctrl
1710 YX=X%01V256
1720 CALL osqbbp
1730 FOR FX=0 TO maxfiles
1740 IS(FX)=?:NEXT
1750 FX=0:files=0
1760 IF ?0X=0 ENDPROC
1770 REPEAT FS=""
1780 FOR LX=1 TO ?0X
1790 FS=FS+CHR$(X%01V256)
1800 NEXT
1810 B%=B%+LX:IS(FX)=FS
1820 FX=FX+1:UNTIL ?0X=0
1830 Files=FX-1:ENDPROC
1840 ---
1850 DEF PROCfile_out(NX,B%,f
%)
1860 LOCAL XX,YX,UX,VX
1870 UX=pbcr:VX=ofc
1880 PROCcol(FX,BX)
1890 XX=N%01Vleng*wid
1900 YX=N%MODleng
1910 PRINTTAB(XX,YX)op$(NX)
op$:
1920 PROCcol(VX,UX)
1930 ENDPROC
1940 ---
1950 DEF PROCmove
1960 IF CX=1 file=file-length
1970 IF CX=2 file=file+length
1980 IF CX=3 file=file+1
1990 IF CX=4 file=file-1
2000 IF file<0 file=0
2010 IF file>files file=files

```

```

1950 ENDPROC
1960 ---
1970 DEF PROCsystem
1980 PROCwindow(3)
1990 PROCcon
2000 INPUT"t5:
2010 PROCcol
2020 PROC("System Command")
2030 PROCwindow(4)
2040 OSCL t5
2050 PROCany
2060 ENDPROC
2070 ---
2080 DEF PROCnew_disc
2090 PROCwindow(2)
2100 IF system=adfs OSCL"DIS
MOUNT:
2110 PROC("Insert New Disc
Now",2)
2120 PROCany
2130 IF system=adfs OSCL"MOU
NT:
2140 ENDPROC
2150 ---
2160 DEF PROCfill(AX,LX)
2170 LOCAL X%,Y%
2180 X%=B%000+320+LX
2190 Y%=X%01V6100
2200 CALL fill
2210 ENDPROC
2220 ---

```

This is one of hundreds of  
programs now available  
FREE for downloading on  
**MicroLink**

```

2230 DEF PROCasem
2240 FOR LX=0 TO 2 STEP 2
2250 P%=$B:OPT LX
2260 .fill
2270 STX ptr+1
2280 STY ptr+2
2290 STA character
2300 LDX #character MOD256
2310 LDY #character 01V256
2320 LDA #10
2330 JSR osword
2340 .loop1
2350 LDY #7
2360 .loop2
2370 LDA definition,Y
2380 .ptr
2390 STA &FFFF,Y
2400 OEY
2410 BPL loop2
2420 CLC
2430 LDA ptr+1
2440 ADC #8
2450 STA ptr+1
2460 BCC loop3
2470 INC ptr+2
2480 BPL loop1
2490 RTS
2500 .character
2510 BRK
2520 .definition
2530 BRK:BRK:BRK:BRK
2540 BRK:BRK:BRK:BRK
2550 ]:NEXT
2560 ENDPROC
2570 ---
2580 DEF PROCwindow(WX)
2590 wid=width:leng=length

```

```

2600 IF mode=6 ENDPROC
2610 IF WX=1 LXX=5:B%1=1:RXX=
35:Y%1=1
2620 IF WX=2 LXX=5:B%1=20:RXX
=35:Y%1=10
2630 IF WX=3 LXX=5:B%1=29:RXX
=35:Y%1=27
2640 IF WX=4 LXX=1:B%1=30:RXX
=38:Y%1=4
2650 IF WX=99 PROCw99
2660 PROCw(8,fc0l,12)
2670 PROCw(4,bc0l,32)
2680 PROCw(8,fc0l,0)
2690 PROCw(4,bc0l,0)
2700 VDU28LXBYXRXRYX30
2710 ENDPROC
2720 ---
2730 DEF PROCw(CX,CX,JX)
2740 GC0L 0,128+CX
2750 VDU24,LXX+32-0X-JX,(31-0
Y%)+32-0X-JX,(RXX+1)+32-0X-JX,
(32-Y%)+32-0X-JX,16
2760 ENDPROC
2770 ---
2780 DEF PROCw99
2790 LOCAL CX,FX,VX,WX,XX,YX
2800 FOR FX=0 TO files
2810 VX=LEN$(FX)+2
2820 IF VX>WX WX=VX
2830 NEXT:YX=length
2840 IF files+1<YX YX=files+1
2850 CX=(files+YX)01VYX
2860 XX=WX+CX
2870 LX=19-X%01V2
2880 RXX=LX+XX
2890 Y%1=7
2900 B%1=Y%1+YX
2910 wid=WX
2920 leng=YX
2930 ENDPROC
2940 ---
2950 DEF PROCrun($data)
2960 okay=FALSE
2970 IF $data="" ENDPROC
2980 ctrl10=data
2990 ctrl12=0
3000 ctrl16=0
3010 ctrl10=0
3020 ctrl14=0
3030 AX=5
3040 XX=ctrl
3050 YX=X%01V256
3060 Z%=USR(osfile)AND&FFF
3070 PROCfuzzy
3080 PROCwindow(2)
3090 PRINT"file = $data"
3100 IF type=1 PROCrdir
3110 IF type=2 PROCrtxt
3120 IF type=3 PROCrbas
3130 IF type=4 PROCrcod
3140 IF NOT okay PROCany:ENDP
ROC
3150 PRINT"Enter your choice
:":
3160 PROCout(op$(FNin("12"))
3170 ENDPROC
3180 ---
3190 DEF PROCfuzzy
3200 direc=100:text=0
3210 basic=0:mcode=0
3220 load=ctrl12 AND&FFFF
3230 exec=ctrl16 AND&FFFF
3240 PROCdirectory:PROctext
3250 PROCbasic:PROCmcode
3260 IF text>basic IF text>m
code type=2
3270 IF basic>text IF basic>m
code type=3
3280 IF mcode>text IF mcode>b

```

```

asic type=4
3290 IF direc=100 type=1
3300 ENDPROC
3310 ---
3320 DEF PROCdirectory
3330 IF system=adfs IF Z%=2 d
irec=100
3340 ENDPROC
3350 ---
3360 DEF PROctext
3370 IF load=0 OR load=&FFFF
text=text+1:IF exec=&FFFF text
=text+4
3380 IF exec=0 text=text+1
3390 IF load>8000 text=text-
1
3400 ENDPROC
3410 ---
3420 DEF PROCbasic
3430 IF exec<8000 IF exec<8
000 basic=basic+3:mcode=mcode-
2:text=text-2
3440 IF load<41900 IF load>=
8000 basic=basic+3:
3450 IF load=8000 basic=basic
+1
3460 ENDPROC
3470 ---
3480 DEF PROCmcode
3490 IF load=exec mcode=mcode
+2
3500 IF exec<8000 mcode=mcode
+1
3510 IF exec>82000 IF exec<8
000 mcode=mcode+2:
3520 ENDPROC
3530 ---
3540 DEF PROCrdir
3550 PRINT"Directory only"
3560 OSCL "DIR "$data
3570 okay=FALSE
3580 ENDPROC
3590 ---
3600 DEF PROCrbas
3610 PRINT"1. LOAD it"
3620 PRINT"2. CHAIN it"
3630 op$(1)="LOAD"+$data+"
"
3640 op$(2)="CHAIN"+$data+"
"
3650 okay=TRUE
3660 ENDPROC
3670 ---
3680 DEF PROCrtxt
3690 PRINT"Text only"
3700 op$(1)=""op$(2)=""
3710 okay=FALSE
3720 ENDPROC
3730 ---
3740 DEF PROCrcod
3750 PRINT"1. *RUN it"
3760 PRINT"2. *LOAD it"
3770 op$(1)=""*RUN "+$data
3780 op$(2)=""*LOAD "+$data
3790 okay=TRUE
3800 ENDPROC
3810 ---
3820 DEF PROCout(t5)
3830 FOR LX=1 TO LEN$t5
3840 OSCL "FX138,0,"STR$ASC
MID$(t5,LX)
3850 NEXT:FX138,0,13
3860 ENDPROC

```

This listing is included in  
this month's cassette  
tape offer. See order  
form on Page 53.



# Keep your finger on the pulse of the Electron and BBC Micro market

at the



Royal  
Horticultural  
Hall  
Westminster  
London SW1

*Nearest Tube: Victoria*

Friday to  
Sunday,  
May 8 to 10

Doors open at  
10am each day  
Close 6pm Friday  
and Saturday,  
4pm Sunday

Much has happened in the six months since the last  
London show. Don't miss this opportunity to keep  
right up to date with all the new products now available  
— plus lots more bargains at rock bottom prices!



**Save £1  
a head  
with this  
advance  
ticket  
order**

Please supply:

☐ Adult tickets at £2 (save £1) £

☐ Under 16's tickets at £1 £

Total

☐ Cheque enclosed made payable to  
Database Publications Ltd.

☐ Please debit my credit card account:

Admission at door:

£3 adults, £2 under 16's



New Horticultural Hall,  
London, May 8-10

Post to: **Show Tickets**  
**Europa House, 68 Chester Road,**  
**Hazel Grove, Stockport SK7 5NY**

Name

Address

Signed

PHONE ORDERS: Ring Show Hotline: 061-480 0171  
Please quote credit card number and full address.

Ref EU5





**SLOGGER**

## SLOGGER'S 'MASTER' RAM BOARD

Transform your Elk into a 64K Electron using the 32K Shadow RAM. This unit fits inside the Electron and is compatible with all current add ons (except the Turbo Driver). Compatibility with ALL software is achieved by being able to switch between NORMAL, SHADOW and TURBO modes (yes... the Turbo Driver is built in). For all correctly written programs HIMEM is ALWAYS at 8000 in Shadow mode and so Word Processing files (ie. STARWORD, VIEW etc.) or BASIC programs can be as large as 28000 bytes IN ANY SCREEN MODE. The 12000 bytes remaining from the max. 20K screen can be used with the latest ROMBOX+ or PLUS 1 UPGRADE as a 12K Printer Buffer.

*The Master RAM Board is available in two forms.*

1. In kit form... a fully built board including components, 6502 MICROPROCESSOR and switch.

**Order MR2 for only £54.95**

2. Installation service... send your Electron to us and it will be upgraded to 64K and returned to you within 7 days of its receipt, fitted, tested including carriage AND ONE FULL YEARS WARRANTY.

**Order MR1 for only £69.95**

### NEW RELEASE

#### SLOGGER ELECTRON DISK SYSTEM (S E D S) BBC COMPATIBILITY WITH USEFUL ADDITIONS

A brand new combination of the excellent CUMANA DISK INTERFACE and the latest SLOGGER ELECTRON DISK FILING SYSTEM (SEDFS) now provides a BBC COMPATIBLE disk system which will accept ANY BBC DISK DRIVE with PSU. EXTRAS INCLUDE: All disk utilities provided on ROM, a valuable SPARE ROM SOCKET, BATTERY BACKED RAM with Page remaining at E00. A REAL TIME CLOCK with DAY, DATE and TIME STAMPING facilities. All this for the first time ever, with extensive 90 page documentation for immediate use with the ROMBOX PLUS or Acorn PLUS 1

**S E D S FOR ONLY £74.95**  
(Including 1st Class post and VAT)

#### SPECIAL OFFER DISK STARTER PACKS

Due to large purchasing preceding recent price increases, SLOGGER can, whilst stocks last, offer SEDS along with top-quality Mitsubishi Disk Drives direct from major BBC suppliers.

SEDS along with a 40 Track Disk Drive  
**ONLY £179.95**

SEDS with an enormous 80 Track 400K Disk Drive  
**ONLY £199.95**

#### S E D F S

A ROM for use by those who already own the CUMANA INTERFACE which will now offer all the facilities of the SEDS described above.  
**ONLY £24.95**

### SLOGGER'S AUTHORISED DEALERS

ALLEN JAMES COMPUTERS, Birmingham, Tel: 021-778 5737  
ATOMIC COMPUTER SYSTEMS, Burnley, Tel: 0282 54299  
AVON COMPUTER EXCHANGE, Bristol, Tel: 0272 637981  
BITS AND BYTES, Bognor Regis, Tel: 0243 867143  
CALANCRAFT, Blyth, Tel: 09323 42137  
CARDIFF COMPUTER EXCHANGE, Cardiff, Tel: 0222 483069  
CARDIGAN ELECTRONICS, Cardigan, Tel: 0239 614483  
CHESHIRE MICRO SYSTEMS, Warrington, Tel: 0925 414109  
COMPUFACE, Central London Tel: 01-580 0181  
COMPUTER DEPOT, Glasgow, Tel: 041-332 3944  
CROYDON COMPUTERS, Thornton Heath, Tel: 01-683 2646  
DA COMPUTERS Ltd, Leicester, Tel: 0533 549407  
DATASTORE, Bromley, Tel: 01-460 8991  
DRAM ELECTRONICS, Stockport, Tel: 061-429 0626  
ENTHUSINET, Nationwide, Tel: 0453 64310  
FARNHAM COMPUTERS, Farnham Tel: 0252 723107  
FIRST BYTE, Derby, Tel: 0332 636280  
HARBOROUGH COMPUTERS, Market Harborough, Tel: 0858 63066  
HOBBYTE, Luton Tel: 0582 457195  
MICRO LOGIC, Nr Aberdeen, Tel: 0589 86233  
MICROWAY, Rainham Tel: 0634 376702  
MICROWISE, Reading, 21 Duke Street  
PMS, East Kilbride, Tel: 03552 32796  
PROJECT EXPANSIONS, Fareham, Tel: 0329 221109  
RAMS COMPUTERS, Milton Keynes, Tel: 0908 647744  
SPE ELECTRONICS, Nr Nottingham, Tel: 0602 640377  
SKAND COMPUTERS, Ulverston, Tel: 0229 56984  
WEST WILTS MICROS, Trowbridge, Tel: 02214 62759  
WREXHAM COMPUTER CENTRE, 24 Abbott Street, Wrexham,  
VELOBYTE COMPUTERS, Schiedamsedijk 5A-6A, 3011 EB, Rotterdam,  
Netherlands, Tel: Rotterdam, Holland, 010 4138197

#### MAIL ORDER ONLY

21st SOFTWARE, 15 Bridgfield Avenue, Wilmslow (0625) 528885

Send orders to SLOGGER Ltd.

107 RICHMOND ROAD, GILLINGHAM, KENT

**DEALER ENQUIRIES WELCOME. TEL: 0634 52303 (2lines)**

**ALL PRICE CHANGES ARE NOW IN OPERATION.**





## ELECTRON THE ROMBOX PLUS

### A replacement for the Plus 1

- \*Two cartridge slots
- \*Four 8K/16K ROM sockets also selectable as RAM
- \*Centronics printer interface
- \*It supports RS423

FREE 8K RAM for use as printer buffer with built-in software  
ONLY £54.95

### STARWORD (16K ROM) (BBC/ELECTRON)

\*Does everything VIEW does plus MUCH MORE!

Designed for the home user, education or small business needs, STARWORD enables even those with limited typing skills to produce and print letters, manuals, reports or any large document.

\*Very extensive printer control facilities including BOLD, UNDERLINE, and WIDE immediately available.

\*Proper mailmerge with STARSTORE and STARSTORE II for producing standard letters.

\*Internal printer driver for Epson compatible printers.

\*Printer Driver Generator ROM available to permit use of most non-Epson compatible printers.

Order P.D.G. at £9.95

\*Enhanced version using the clock feature within the CUMANA DISK INTERFACE for day, date and time stamping. \*It is certainly the most powerful currently available for the Electron.\*

Electron User, April 1986

STILL ONLY £34.50

### STARSTORE & STARSTORE II (BBC & ELECTRON)

#### THE SLOGGER DATABASES

Store and retrieve your names and addresses or any other information with either STARSTORE database ROM.

For cassette users, STARSTORE offers

\*255 records with 30 fields per record.

\*All standard database functions such as searching, sorting and printing of files.

STARSTORE: Only £21.95

For disk users, the more powerful STARSTORE II provides

\*9999 records with 90 fields per record.

\*Advanced database functions such as formatted printing to print fields in any position whilst retaining a simple to use menu-driven database.

STARSTORE II: Only £29.95

### 16K SIDEWAYS RAM

Has the provision to run Sideways ROMs as well as being selectable as a 16,000 byte print buffer, provided that you have ROMBOX-PLUS or PRINTER ROM.

\*COMPLETE WITH RAMS

\*WRITE PROTECTED

\*NO SOLDERING

\*SIMPLY FITS INTO A ROM SLOT ON ANY SLOGGER ROMBOX

\*ONLY £29.95

### ELKMAN (8K ROM)

An Electron system manager providing the ability to save and then load ROM images for use in sideways RAM. Gives complete control of all ROMs and interface units present on the system.

Only £14.95

## ELECTRONS IN STOCK

Slogger and their Authorised Dealers now have access to boyh 32K and 64K Acorn Electrons at excellent retail prices. For a limited time only, Slogger can also offer Electrons on Mail Order at very special prices.

Acorn Electron 32K Only £69.00

Acorn Electron 64K  
(inc. Master RAM Board) Only £99.00  
(Including VAT and Postage)

### TAPE TO DISK COPIERS

#### VERSION 2 - NOW MORE SUCCESSFUL SOLIDISK CRACKED.

An advanced ROM utility to transfer more protected tape programs to disk - eg. Acornsoft, Superior and Micropower - than ever before.

Please order

T2P3 for the PLUS 3  
T2CU for CUMANA DFS  
T2SEDFS for SEDFS  
T2P4 for AP4 DFS  
T2SD for SOLIDISK  
ONLY £24.95

Upgrade Version 1 to Version 2 - £5.00 and return original ROM

NEW

### JOYSTICK INTERFACE

NEW

\*Brand new digital joystick interface allowing use of ATARI type 9 pin joysticks on the Electron.

\*Plugs simply into ROMBOX PLUS or PLUS 1 cartridge slot.

\*Supplied with software (on ROM) to allow compatibility with a large percentage of Electron games.

\*Compatible with Electron disk systems and the new versions of the tape to disk copiers.

ROMBOX PLUS version £19.95

PLUS 1 Version £19.95

(Including PLUS 1 Upgrade)

### ELK TURBO-DRIVER

(DESIGNED BY ANDYK LTD.)  
INCREASES THE SPEED OF YOUR  
ELECTRON COMPARABLE TO THE BBC

- ★★ UP TO 100% IMPROVEMENT IN SPEED ★★
- ★★ ABLE TO RUN BBC SOFTWARE (Non Mode 7) ★★
- ★★ WHERE SPEED WAS THE LIMITING FACTOR ★★  
(Such as Acornsoft's Aviator Flight Simulator)
- ★★ MAKES ELECTRON SOFTWARE RUN FASTER ★★

CAN BE SWITCHED BETWEEN NORMAL &  
"TURBO DRIVE"

- ★★ OPERATES IN ALL ELECTRON MODES ★★
- ★★ NO SOFTWARE MODIFICATION REQD. ★★
- ★★ COMPATIBLE WITH ALL ADD-ONS ★★
- ★★ (Plus 1, Plus 3, Rombox, Adapter Boards, etc) ★★

All inclusive ONLY £44.95 (VAT Included)  
Fitted, Tested, including switch and carriage.  
PLEASE QUOTE T-D1 ON ORDER FORM  
The Upgrade "TURBO DRIVER" Kit available  
(including switch)

PLEASE QUOTE ON FORM T-D2

£29.95 Inc P&P

## ROMBOX

\*Maximum 8 ROMs instantly selectable

\*Compatible with BBC ROMs (eg View and Viewsheets) and all Electron ROM based software

\*Fully compatible with PLUS 1, PLUS 3 and other related add-ons

\*Supports 8K and 16K sideways RAM

Still Only £44.95

### ★ NOW AVAILABLE ★ ★ THE SLOGGER ROM CARTRIDGE ★

Twin ROM adaptors designed to carry any 8K or 16K Eprom for the Acorn plus one. Slogger ROMBOX PLUS and the BBC Master Series.  
Only £12.95

### PLUS 1 ROM UPGRADE

Replacement 8K Eprom to allow loading of cassette. Software in High resolution Modes. Allows Basic to be called instead of being forced into another language on Switch On or CTRL-BREAK.

Only £11.95

### STARGRAPH (8K ROM)

Graphics Rom giving screen dump to EPSON printer, printing of text at any angle or any size, circle, ellipse polygons, arc, dotted lines, colour filling plus more.

Only £21.95

### PRINTER ROM (8K) (BBC/ELECTRON)

Allows use of sideways RAM as an 8K or 16K print buffer and offers a host of useful utilities for any printer, such as italics, fonts and underlining

Only £19.95

### \*TREK (16K ROM)

A ROM disassembler with a difference. Ideal for beginners not only to Machine Code but to the Electron itself as this ROM Utility actually COMMENTS as it disassembles, a feature found in no other package.

SPECIAL INTRODUCTORY  
PRICE £17.50

### STARMON (8K ROM) MACHINE CODE MONITOR

\*Display of memory in: ASCII and binary, decimal, octal or hexadecimal.

\*Full support of sideways ROMs.

\*Comprehensive debugging facilities, including breakpoints, traces and events.

\*"a very professional piece of firmware"

...Acorn User.

Only £19.95

All prices include VAT P&P UK Mainland only

SEND  
FOR  
THEM  
TODAY

Cheques payable to  
SLOGGER LTD

☐ Access No

☐ Visa

Name

Address

Expiry Date

PLEASE SUPPLY

Cost

1 £

2 £

3 £

4 £

5 £

Total £

Please send orders to SLOGGER LTD, 107 RICHMOND ROAD, GILLINGHAM, KENT



# Robotic blockbuster

Program: Plan B

Price: £2.99

Supplier: Bug-Byte, Victory House,  
Leicester Place, London WC2H 7NB.  
Tel: 01-439 0666

NOW and again a game appears on the scene that has that something special. This is one of those times and this is most definitely one of those games.

The object is to guide your little robot on a mission through 54 screens which represent the different rooms of a Togrian Computer Complex, destroying the numerous vital parts of the computer as you go.

The golden rule to observe as you make your way from screen to screen, is that if it moves it must be an enemy, so you should either avoid it or instruct your little robot Rambo to blast it out of existence.

For a start it's a little difficult to classify what type of game it actually is, but I suppose Plan B qualifies as a multi-screen, shoot-em-up, arcade adventure maze game.

Each screen shows a room with many different puzzles to solve and nasties to blast. The nasties are different types of security guard robots that attack your drone. Each one causes a varying amount of damage, shown as a drain on your energy level.

Another problem is that the security robots are teleported to the current room and the longer you spend there the more robots are beamed in as reinforcements. In fact if you hang around too long in certain rooms they start to resemble Piccadilly Circus in the rush hour.

You are able to fight back but you'll need to top up your ammunition from time to time; when the chance arises. The energy level of your robot can be restored by maintenance, achieved by collecting the spanners and cans of oil

you'll find on your travels.

Your passage from room to room is not always as straightforward as it appears. You will need to collect numerous keys and use them to get through locked doors in certain rooms. However, you will soon find that a door will not open if the correct key has not yet been collected.

In addition to the obvious routes through the screens, many of the walls conceal passages which will only be revealed when the wall is shot away. Similarly many of the passages contain barriers which can be destroyed only from a particular position on the screen.

A further complication to those bent on charging through and blasting everything in sight is that stray shots have a nasty habit of always hitting an ammunition dump or oil drum.

While that does not do you any immediate harm it can be very frustrating to battle through a pack of security robots then find yourself without the means to reload.

The game appears to have

something for everyone, from those who enjoy painstakingly producing those complicated maps and diagrams, showing us how to get from A to B in the easiest and most efficient manner, to those who just wish to work off a head of steam and spend an hour or so nasty-blasting.

The only minus point is that all the graphics are in black and white, but the quality more than compensates for this. They are extremely detailed and each screen seems to offer another example of superb design which is almost an artform.

Character movement is super-smooth and at times the action is not just fast, it's lightning fast. Sound effects are fairly good. A neat little tune is played between games, although this can be switched off if it becomes annoying.

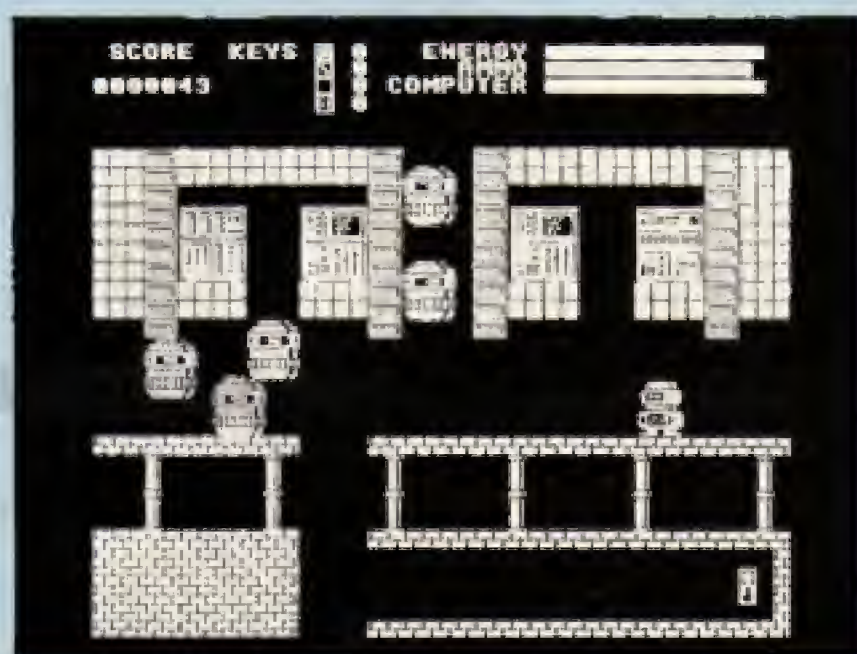
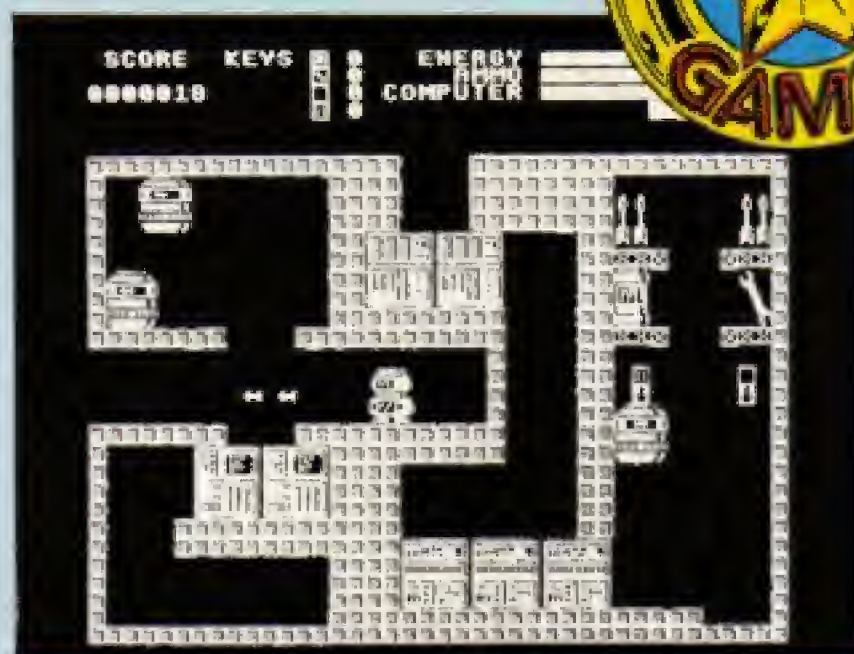
Movement is with the Z and X keys for left and right with the Shift key producing lift up the screen. It's nice to see the Return key being given a rest and this is only used to open a door.

The nasties are blasted with the spacebar. There is also a pause facility which can be useful to examine a screen without being zapped.

The only criticisms are that you only get one life - you then have to restart - and the lack of colour. But Elite proved it's not essential for a first-class game and that's certainly what you have here.

Bug-Byte has given us some very good games for the Electron in the past but this one is a real blockbuster. At this price it has to become a bestseller.

Beejay



Sound	8
Graphics	10
Playability	10
Value	10
Overall	10



## A range with mysteries

Program: *Xor*

Price: £9.95

Supplier: Logotron, Dales Brewery,  
Gwydir Street, Cambridge CB1 2LJ.

Tel: 0223 323656

XOR is a maze game that is played over 15 levels with the option of beginning on any – though I suggest you cut your teeth on the first. Each maze has a name which often has a connection with its contents or construction.

The aim is to collect all the masks held within the maze. The number of masks varies from maze to maze, but the total present and the total collected are always displayed on the screen.

Also shown is the number of steps you have taken while exploring the maze – you are allowed up to 1,999. This system is used instead of a time limit.

The maze walls are constructed of brick and cannot be walked through, and some of the passageways are filled with two other types of material, known as Dots and Waves.

Dots can only be passed through when travelling in the horizontal plane and Waves in the vertical. In this way parts of the maze can be cordoned off until approached from the correct direction.

The maze also contains four special characters – as each of these is found a quarter of the maze map is drawn to the right of the screen. This shows the position of all masks, but not the dots, waves or yourself.

The first maze should pose few problems – the fun really begins on level two. The dots and waves are still there, but they have been joined by fish and chickens.

The fish act in a similar way to the boulders in Repton, falling when unsupported. The chickens are a different kettle of fish – they "fall" horizontally from right to left.

A blow on the head from either of these characters is fatal, so a path through a pile of both types must be planned carefully.

Maze number four, entitled Explosive Mixture, sees the appearance of bombs and bottles of nitro glycerine. The starting point for this level is inside a completely sealed cell – you soon learn that dropping fish or chickens on to bombs causes them to explode, blowing a hole through the nearest wall.

A few words of warning at this point: Don't stand too close to a bomb when detonating it, and always try to clear away any masks that may be near the bomb. You have to collect

every mask to proceed to the next maze, which is pretty difficult when you've atomised half of them.

The Dolls House, maze six, introduces the dolls – harmless characters which continue to move in the direction in which you push them.

Unfortunately they don't detonate bombs, but I found them to be most useful when I wanted to manoeuvre a fish directly over a bomb before dropping it. This is done by lining them up to create a makeshift bridge across which the fish is pushed.

Some of the maze's nastier characters are the frowning masks, which render the maze walls invisible when collected, though all other characters are still displayed. The situation remains this way until you collect another frowning mask.

Very soon you begin to think twice about moving any character at all. The game's designers have been quite ruthless and some of the most harmless looking moves have dire consequences.

There have been dozens of occa-

sions when I have just sat there, staring at the screen, trying to convince myself that there has to be a logical explanation for every puzzle.

Thoughtfully, Logotron has provided an abort key, especially for those occasions when you muck it up.

One very clever feature of the game is the Replay mode which comes into operation when you've lost your second – and final – life, and retraces at high speed every move that you made on the current maze. It can be used to determine at which point you made a wrong move.

What at first appeared to be a very ordinary game is an absolute gem. The number and complexity of the puzzles is overwhelming.

Every Electron owner who wants more than zap and blast should buy this game.

Sound.....	7
Graphics.....	8
Playability.....	10
Value for money.....	9
Overall.....	9





## Something really special

Program: *Sphere of Destiny*

Price: £7.95

Supplier: Audiogenic, 12 Chiltern Enterprise Centre, Theale, Berks, RG7 4AA.

Tel: 0734 303663

JUST in at the last minute is *Sphere of Destiny*, the latest game from Gary Partis, author of such notables as *Positron*, *Psycastria* and the vast *Dr Who* and the *Mines of Terror* on the BBC Micro. The title is perhaps more suited to an adventure, though I assume it derives from the reggae group *Spear of Destiny*.

The idea of the game is simple: Guide a bouncing ball through 60-odd levels of a 3D obstacle course within the allotted time limit. Control is relatively simple – left, right, accelerate, decelerate and jump/bounce.

The action takes place on a five-lane roadway made up of a number of multicoloured tiles, each of which has a different function.

White squares give bonus points, purple ones make you bounce. Green

tiles increase your speed but red bring you to a virtual standstill. Beware the cyan tiles – right becomes left, accelerating slows you down and you're soon totally lost.

Owners of the Spectrum, Atari or Amstrad CPC will notice many similarities with *Trailblazer* from Gremlin Graphics.

*Sphere of Destiny* is a perfect example of the way delicate little refinements can give a game that subtle feel of something really special.

From the rolling demo to the clicking on and off of the keyboard LED as an invitation to enter your name in the high score table, *Sphere* bombards you with special effects.

The game features some of the most advanced programming techniques seen on the Electron. Unfortunately I found *Sphere*, like Gary's other recent games, much too difficult.

This is a great pity as he's remarkably good at finding that elusive addictive quality. I still regularly go back to *Psycastria*, but I have rarely completed the first stage. Perhaps



Gary should release his games before he's had a chance to get too good at them – it might give us mere mortals a chance.

I found it particularly ironic that the highly amusing scrolling text featured a message of thanks to someone who had helped make the game "more playable". I only made it to level three a couple of times in a few hundred attempts.

*Sphere of Destiny* is driving me nuts, but I'm sure it'll still be driving me nuts in a year's time.

Chris Murphy

Sound.....	6
Graphics.....	10
Playability.....	8
Value for money.....	10
Overall.....	9

## Sloppy simulation

Program: *Ice Hockey*

Price: £2.99

Supplier: Bug-Byte, Victory House, Leicester Place, London WC2H 7NB.

Tel: 01-439 0666

FANCY skimming over the ice and flicking the puck into the opponents' net? That's what's on offer in this team game simulation for one or two players from Bug-Byte.

The rules are all well explained on the cassette inlay and the keys you need to use are displayed on the screen at the start of the game. In fact, it's a well-packaged budget-priced game.

You start with a face-off in the centre and you can see the central third of the rink. If the puck moves to either end the appropriate third of the pitch is drawn. This redrawing is rather sluggish on the Electron and makes the game seem disjointed. There is a permanent on-screen display of the score and the amount of time played.

Ice hockey lends itself to being a computer game. It is only six-a-side and has strict rules about player positions, so the number of characters moving on the screen is limited and

should make for a fast game. Also, a small puck is used rather than a large ball which should help with the speed of drawing.

The playing rules are simple too. There are no throw-ons to cope with as the ball bounces off side walls, and in this well behaved version there are no fouls and no sin bins.

With so many advantages over football, it's a pity that this game does not really work. The players do not glide gracefully over the ice, but jerk about in a manner that would cause real players to fall over on the ice.

There seems to be no way of giving the puck a satisfying thwack up to the other end of the rink. Instead, you can only push it a small distance in front of you.

One of your worst problems is making sure that your computer-controlled teammates do not get the puck. If they do, they run up to the goal and spend the rest of the game not scoring and not passing.

As you try your hardest to wrest the puck from them, the noises (hardly sound effects) will drive you to distraction. You'll wonder where the music promised on the cassette inlay has got to – the suggested keys for music on and off have no effect.



If the opposition get the puck they will run it up the pitch and spend ages failing to score or pass. Once again, the noises are intolerable and the best route out is to quit the game by pressing the Escape key.

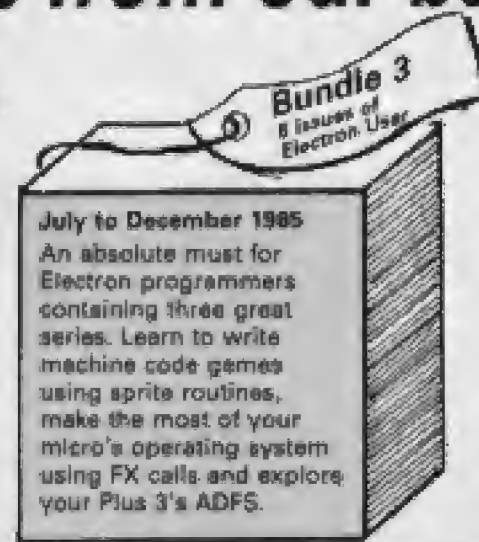
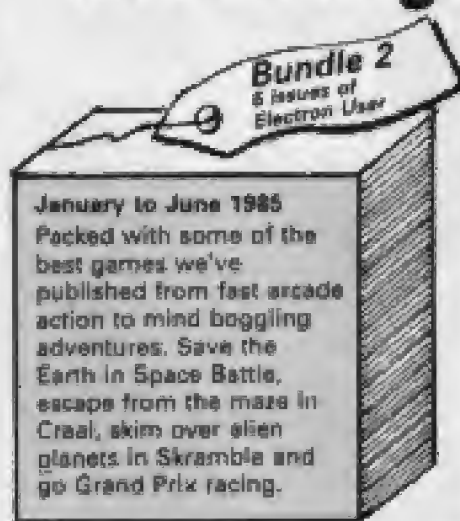
It will be small consolation to Electron owners to know that if they load the same code into a BBC Micro, all the problems vanish and the game becomes fast, smooth, musical and much more fun.

I really wonder if Bug-Byte checked *Ice Hockey* on the Electron. I feel sure the company can't have intended to let such a poor game tarnish its reputation.

Rog Frost

Sound.....	0
Graphics.....	5
Playability.....	1
Value for money.....	2
Overall.....	3





*This could be your last chance to build up a library of fun and knowledge from our back issues!*

Only  
**£5.90** per bundle

Or send £17.95 and we'll also include the appropriate monthly tapes!

Need a binder for your magazines? We'll send one for £3.95

To order, use the form on Page 53

## Programs from Electron User – on tape £3.95 each!

### May 1987

**HECTIC HENRY** Escape from the maze and collect the gems in this super arcade game. **SPELLING CHECKER** Check the spelling in your View files. **MANDELBROT** Explore the amazing world of fractal geometry. **DISC MENU** A super utility to organise your DFS and ADFS discs. **ANIMALS** A fun educational game featuring artificial intelligence. **10 LINERS** Two short, yet impressive listings.

### April 1987

**DRAGON'S DOOM** A fun educational game for youngsters learning to tell the time. **GRIDDER** A fascinating puzzle that will strain your brain. **WIMPS** A complete desktop environment with windows, icons, menus and pointers. **10 LINERS** Two short, yet impressive listings.

### March 1987

**SUPER BOSS** Try for the league and FA cups in this exciting football management simulation. **AWARI** A classic African board game for one or two players. **ELKZAP** Recover lost files with this powerful Plus 4 disc editor. **10 LINERS** Two short, yet impressive listings.

### February 1987

**MAZE** Escape from the creepy castle. **KEYBOARD PLAYER** Turn your micro into an electronic organ. **TOMMY** Guide little Tommy through the woods. **CARPET** An impressive graphics display. **GCOL** Experiment with extra colours. **10 LINERS** Two short but impressive listings.

### January 1987

**GRID WARRIOR** Battle with alien gladiators deep in space. **MODE 7** A Mode 7 simulator providing teletext graphics. **SMILEY HUNT** The final version of AI's scintillating megagame. **10 LINERS** Zap the alien intruder and dodge the asteroids. **LISTER** A utility to enable you to list programs directly from disc or tape.

### December 1986

**SANTA'S SLEIGH** Help Father Christmas

fill his sleigh with presents in this fast arcade game. **YULE SPELL** Spelling can be fun with this seasonal variation on the old favourite hangman. **POGO** A Logo turtle graphics compiler. **FUNCTION KEY LISTER** Keep track of your function key definitions with this helpful utility. **10 LINERS** Two short but impressive graphics demonstrations.

### November 1986

**TRAIN TROUBLE** You've just robbed a bank. Can you escape the forces of law and order in this chase over the carriages of a fast moving express? **DAY AT THE RACES** You can gamble away to your heart's content in safety with our entertaining two player horse racing game. **BASIC COMPILER** This superb utility will turn your Basic programs to machine code in no time at all. **10 LINERS** A routine from our fascinating series of short programs.

### October 1986

**RAT CATCHER** Try your hand at pest control with this fast action arcade game. **MATHS RUN** Put your powers of mental arithmetic to the test with this educational program. **BOS** This on screen editor will take the tedium out of debugging listings and sort out your typing slips. **CROSSWORD** Two programs for crossword lovers – one to design crosswords and the other to help you solve them. + **BONUS game:** **QUASIMODO'S QUEST** Rescue Esmerelda in this colourful version of the all time favourite.

### September 1986

**CAVERN CAPERS** Blast your way from the depths of the labyrinth to escape from the planet. **DRAW WRITER** A superb utility to translate your on screen graphics to the procedures to create them. **COMPANY COUNT** Work your way up the company pecking order in this educational maths test. **TEN LINERS** Another short but fascinating program. + **BONUS game:** **ROCKFALL** Go diamond mining in this intriguing multi-screen arcade romp.

### August 1986

**HOWZAT!** A vivid recreation of a day's

test cricket for two players. **3D MAZE** Quick reactions and a sense of direction are needed to escape from our twisty maze. **TEXTED** Let this versatile text editor turn your micro into an electronic typewriter. **DRIVER** A powerful printer driver for View.

### July 1986

**ROYAL WEDDING** Celebrate the royal event with our ingenious sliding block puzzle. **SNAPDRAGON** Two player version of the classic card game. **ATTRIBUTES** Colourful two player strategy game. **FORMATTER** Make your listings easier to read. **DISCS** Extended star commands. **EXTRA COMMANDS** A WHILE . . . WEND command for your micro. **PLUS** superb digitised picture of Andrew and Sarah.

### June 1986

**FISHING** Enjoy a quite day by the river, and maybe catch your tea as well! **TACTICAL PURSUIT** A two player strategy game played with pawns on a chess board. **MINIBASE** Create an electronic telephone directory. **EXTRA COMMANDS** Add more commands to Basic. **SCREEN DUMP** Multi-tone screens dumps for Epson compatible printers.

### May 1986

**MISSILE JAMMER** Defend the city of Pezina from a missile invasion. **VECTOR LETTERS** Use \*LINE to create double height text. **DEGREES** Convert from Centigrade to Fahrenheit and vice-versa. **CROCODILE TEARS** Spell well or end up as a crocodile's dinner. **ZAP** Blast the marauding aliens. **EXTRA COMMANDS** Adding new keywords to Basic.

### April 1986

**INVASION FORCE** Exciting zap 'em space game. **EASTER EGG HUNT** Seasonal game using compass points. **BACK TO BASICS** Music tutor. **NOTICE BOARD** Text scrolling utility. **SEARCH and RECOVER** Two routines from the disc article. **NOTEBOOK** Recursion backwards.

To order, use the form on Page 53



# Found - the Lost Crystal, and it's a real cracker

IT seems as though we've been waiting eons for the new Epic release, and the numerous false start press releases by Merlin and myself have probably made things even worse.

But now the good news - The Lost Crystal is here. And yes, it was worth waiting for.

I've only had my copy for a few days, but, am already totally hooked and hope the withdrawal symptoms aren't too painful. This is one adventure I am really going to enjoy reviewing.

It has more than 400 locations - on two cassettes - with superb hi-res graphics. With an advanced language interpreter, character interaction, store, continue and auto-save features, this must be the best adventure ever for the Electron.

All I'll say for now is - go out and buy it, you won't be disappointed.

This month has seen the completion of my database of text adventures, which has grown rather like Topsy since I began the task last November.

I have been absolutely amazed at the wealth of adventures available and the numerous oldies which seem to have been lurking in the back storeroom of some large software companies.

I am indebted to many individuals and companies for their time and assistance in the furtherance of this project. But I would like to take this opportunity to give special thanks to Steve Botterill at Superior and Rams Computer Centre for

all the help and software they have given.

I would also like to thank Deborah Phillips, Toby Bedding, Alan Dunwiddie and Ian Watson for their maps and solutions to Castle of Riddles.

However the prize copy of Rebel Planet is winging its way to Andrew Myers, whose solution was not only the first out of my mail bag but was also one of the best maps I have ever seen.

Mick Lovelock has written suggesting that I include a monthly adventurers' dictionary in this section - you know the type of thing: A for Adventurer, B for Bash, C for Call and so on, together with verb lists and synonyms. If you think this is a good idea, please write and let me know.

It's congratulations time, and it appears that the Bastien family has done it again. Well done, 14-year-



old Paul, on officially becoming the first person to complete Superior's Raven-skull.

Next month it is Top Twenty time again. Is your favourite adventure the new No1? Watch this space to find out. So until mazes become straight, happy adventuring!

## OVERTURE AND BEGINNERS

The definition of what is a good adventure is an enigma, as many of its qualities must in essence depend upon the preferences and experience of the individual adventurer.

For many reasons I have a definite preference for long, involved adventures in which the puzzles are totally logical.

As regular readers will appreciate, I also have a particular dislike for random magical elements.

Yet the enormous sales figures of games such as Sphinx Adventure and Classic Adventure tend to suggest that we all find quite different niches. Hence any judgement made by myself or any other critic must therefore, to a large degree, be subjective.

Surely one virtue of any adventure is the construction of good puzzles which will obviously vary in complexity depending upon the difficulty factor of the adventure.

Ring of Time by Kansas

City Software could be classified as a beginner's adventure in which the problems are devious yet logical. There are only 48 locations to explore but numerous, seemingly random objects to discover and utilise.

The latter part of this adventure introduces a clever chaining puzzle using some of the objects you have collected.

A chaining puzzle involves linking different objects or events to achieve a single or multiple task. Hence you arrive at a locked door in which the key can be seen in the lock on the other side.

Hacking or thumping the door will do you no good, and indeed wastes time as your candle burns lower and lower.

But wait... haven't you a piece of parchment in your possession? You know, that piece you found in the Monk's chamber.

That penknife which has been in your pocket since your exploration of the

cottage must surely be good for picking locks. But don't rush into it... think!

DROP PARCHMENT - PUSH PARCHMENT under door - PICK LOCK with penknife - PULL PARCHMENT and you can now lay your hands on that valuable key. So, TAKE KEY - TAKE PARCHMENT (it might have another use) and UNLOCK DOOR.

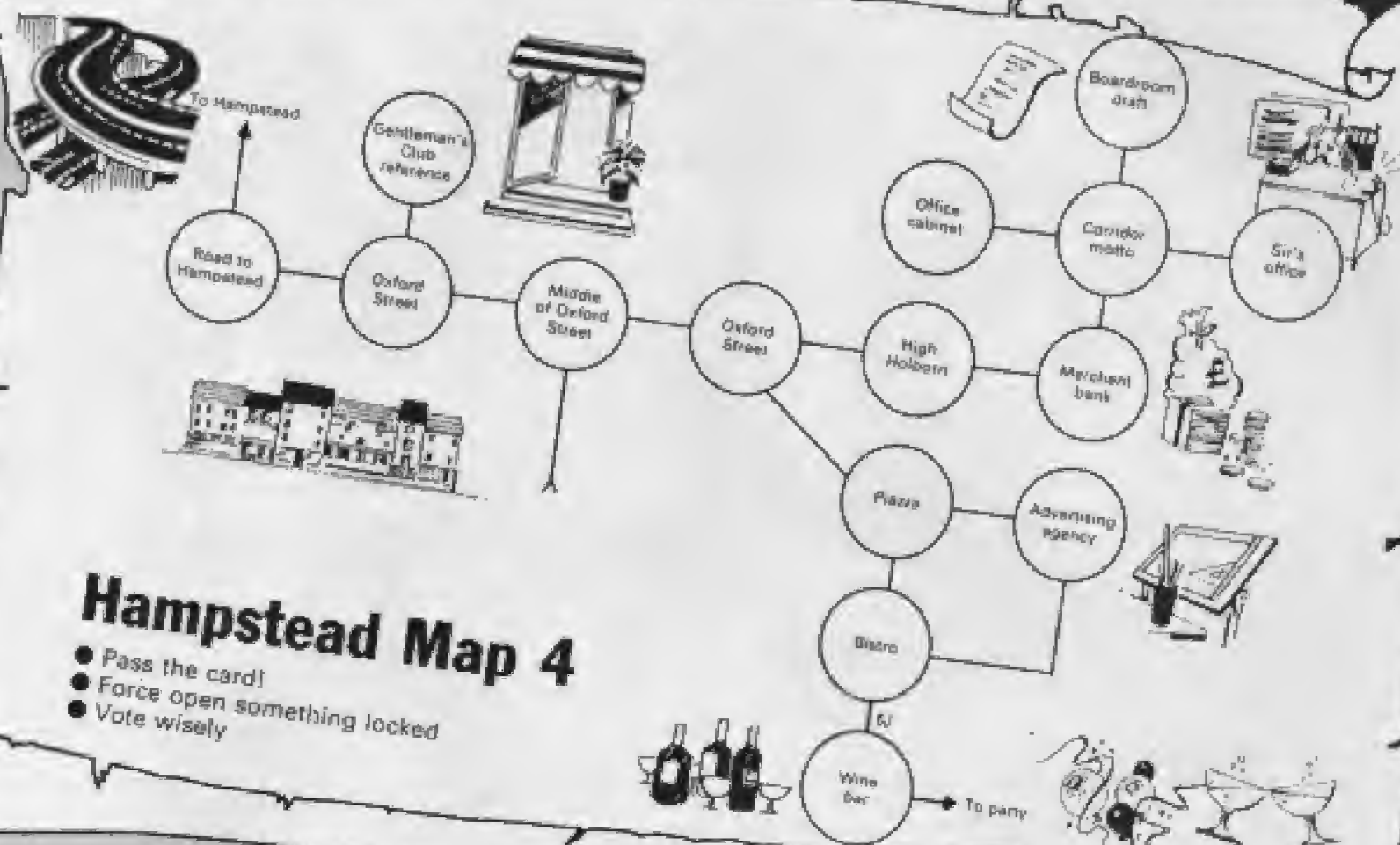
On opening the door you discover a sword and a shovel which will be of obvious use in the final stages of the game.

Always EXAMINE carefully the rooms and the objects you find on your journey through any adventure. Almost all will have some use - only the cads litter their adventurers with red herrings. And linking objects, as above, leads to success on more occasions than bashing ever will.

Successful adventurers tend to need brains as well as brawn.

Next month I will look at making sense of magic.





## Hampstead Map 4

- Pass the card
- Force open something locked
- Vote wisely

### HALL OF FAME

#### Arrow of Death 1 – John Tipper

To reveal the secret passage, you must TURN COAT-OF-ARMS three times. EXAM BED then use the sword from the passage to CUT PILLOW. EXAMINE the purse that you find to get the coins, then use them to pay the beggar. He will then leave you an orb, which you can use as a light source.

Get the rope from the courtyard, the hook from the kitchen and the armour from the bedroom. Go to the ledge, TIE ROPE, HOOK ARMOUR, TAKE ROPE and GO LEDGE.

Now PULL ROPE, WEAR ARMOUR and RUB ORB. You will find a serpent when you enter the cave, so KILL SERPENT three times and get the arrowhead.

#### The Time Machine – Chris Lowe

Your first problem is to find Dr Potter's house. This is solved by travelling NORTH, WEST, SOUTH, NORTH. Take and wear the gloves but, ignore the bell because nobody's in.

Go around the side of the house. BREAK and ENTER. EXAMINE the things you can see in the study and TAKE what you find.

In the cellar you should find the Time Machine. The cassette recorder tells you your mission. Once you have entered the Time Machine, the next step is to try to control it. This is where the fun really starts. Don't give up – there are four possible locations which the machine may visit.

#### Enthar Seven – The Boss

You begin your quest at the console of Space Hopper which is spiralling in a fastly decaying orbit about the Earth-like planet, Enthar 7. Don't hang around, your actions must be quick and decisive if you are to avoid oblivion as the heat shields of your craft melt.

GET HELMET – STAND – EXAMINE SCREEN – SOUTH – WEST – EXAMINE SHELVES – EAST – SOUTH – EXAM SOCKET – PLUG TORCH INTO SOCKET – NORTH – NORTH – WEST – PUSH BUTTON.

Save this position, for now the adventure really begins.

### PROBLEMS SOLVED

Being in possession of so many solutions to Castle of Riddles has enabled me to answer a few of the many readers' queries on this puzzler of a game.

A young lady called Alexia appears to always end up dying in the bear's sitting room.

It seems to me that you should SAVE your position upon entering this room and then type SIT three times in order to try out all of the chairs – just like Goldilocks.

Deborah Phillips has collected the tiara, necklace, figurine, vase, coin, portrait, cushion, sculpture, diamond, clock and brooch. Having deposited them in the safe she wonders what is missing. It appears that you have missed the emerald in the winding passage, the mink in the giant's shooting gallery and the onyx in the coloured room maze.

Emma Rutherford, Lorraine Smith and Christopher West have all asked for solutions to the riddles.

If you don't want to risk possibly spoiling your enjoyment of this adventure – or for that matter your

sanity – I suggest you skip reading the next few paragraphs.

● What everyone overlooks? NOSE

● What a rich man has and wants more of and a fat man has but doesn't want? POUNDS

● What gets wetter as it dries? TOWEL

● Little Nancy Etticoat, with a white petticoat, with red nose, the longer she stands, the shorter she grows? CANDLE

● Lives in winter, dies in summer and grows with its roots upwards? ICICLE

● The beginning of eternity and the end of time and space? E

Epic's Wheel of Fortune is still foxing a number of people. Richard Forrow and Craig Rowe can't get past the snake. Try charming it with the Indian pipe and it might disappear into the basket.

Richard is also having difficulty in getting rid of the bird. You should play the music box and see what



## From Page 21

happens.

In Classic Adventure Martin Richardson has never seen the vending machine. Try exploring the maze west of the Long Hall.

He is also exasperated at losing the golden eggs to the Troll – I think the bear is the answer to that problem.

Martin adds that his version of the game crashes when he loses his way in the Hall of Mists.

While on the subject of bugs, a quick phone call to Adventure Soft UK – my castle must be the first in Britain with a gothic trim-phone – has settled a few problems with some of the old Adventure International games.

The buckle which crashes many versions of Strange Odyssey is no longer a problem. Brian Howarth has re-coded this adventure, also Pyramid of Doom.

If you have one of these older versions, return it to



Adventure Soft UK for a replacement.

The inability to discover a fourth location on the raft in Savage Island 1, is not a bug but a wicked random number generator. So if any of you are stranded in this adventure you had better keep searching.

Mystery Fun House is causing Matthew Williams all sorts of problems. You

should use the wrench to remove the bolt on the grating. Your shoe holds something useful... and don't try going through locked doors.

Matthew, among many, asks what is my favourite adventure. At the moment it must be a toss up between Robico's Myorem and Epic's Lost Crystal.

I'll let you know which one

gets the decision after I have played the new Epic game a little longer.

Finally, in Rebel Planet, Grant Fernes should use the detractor to lift the sewer cover and must bribe the museum guard with the chuckling stuff. By the way you should find the resistance movement in the sewers – among other things!

QUAL-SOFT

# THOUGHTWARE

Sports simulations

## SOFTWARE THAT CHALLENGES, SOFTWARE THAT LASTS!!

Way back in 1983 we introduced LEAGUE DIVISION 1 for the BBC Micro. In September 1984 the original version of SOCCER SUPREMO, an Electron Version of this game, was introduced. In both games you become the manager of a newly promoted 1st division team, which you have to build up into a challenger, and hopefully winner, of the 1st Division Championship. The game uses professional simulation techniques which produce a true, natural management simulation rather than the simple minded mental arithmetic exercises of other "simulations". This caused this response:

*"Hugely enjoyable but dangerously addictive" says Dr. Trevor Harley, Department of Psychology, University of Warwick*

*(He's bought four of our soccer management games)*

**YOU AIN'T SEEN NOTHING YET!!**

THE NEW

# SOCCER SUPREMO

## A SOCCER MANAGEMENT SIMULATION

To the original version of SOCCER SUPREMO we've added; the F.A. Cup, the European Cup, the U.E.F.A. Cup and the European Cup Winners Cup. We've introduced multiple DATA files for the different seasons and to allow a massive transfer market of over seventy players, from World Cup stars to top scoring non-league players, we've retained the 3D, 22 man, 90 minute football match graphics, improving the graphics' layout. We've added sound, in-match injuries, named goal scorers, penalty shoot-outs (European matches), and replaced the complicated match statistics with a post match individual player assessment. We've ..... well, lots of other small improvements.

The game is now almost three times the size of the original, using two tapes plus the multiple datafiles. But .....

**WE'VE ADDED NOTHING TO THE COST!**

The new SOCCER SUPREMO is supplied DIRECT from Qual-Soft on a same day basis. TAPE 1 + TAPE 2 + MANUAL, P&P and VAT still costs £9.95. Payment by cheque, PO or Access authorisation, made payable to Qualsoft.

QUAL-SOFT  
Dept. EU,  
18 Hazlemere Road  
Stevenage SG2 8RX

Tel: 0438  
721936



Please supply:  
SOCCER  
SUPREMO  
for my Electron

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Access No. (if applicable) \_\_\_\_\_



# INCENTIVE

FOLLOWING THE EXEMPLARY GAC — INCENTIVE NOW PRESENTS FOR THE BBC & ELECTRON

# THE KET TRILOGY

BY GRAHAM THORPE AND RICHARD McCORMACK



## \* THE KET TRILOGY — THE CELEBRATED ADVENTURE CLASSIC \*

### THE STORY SO FAR...

The Lords of Ket rule a strife-torn land where magic and mayhem are common place. Raiders from the east sweep in and devastate the countryside, spurred by the villainous Priest-King Vran Verusbel, arch-mage of the cult of mad monks and by the beautiful, though utterly evil, Priestess Delphia.

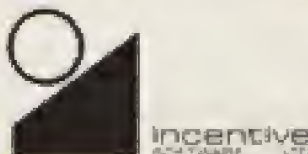
Unjustly condemned for a murder you did not commit, you have been offered the chance of escaping the hangman's noose by undertaking a perilous quest. Naturally you accept, but to ensure your loyalty to the cause, the Lords have placed a magic assassin bug on your neck, ordered to sink his poisonous fangs into you at the slightest sign of cowardice.

Poised at the brink of the unknown village, you stand alone with the daunting mission before you. With just a handful of coins, your trusty sword and the will to succeed...

Your task is to travel beyond the mountains and then underground via Vran's Temple to the ultimate confrontation with Vran himself, penetrating his inner sanctum, beyond the Guardians of the Gates...

THE THREE ADVENTURES  
TOGETHER FORMING THE  
CLASSIC AND COLOSSAL  
KET TRILOGY

**MOUNTAINS OF KET**  
**TEMPLE OF VRAN**  
**THE FINAL MISSION**



**THE KET TRILOGY** Series of adventures are available from leading Software Dealers nationwide. In case of difficulty, please use our fast and efficient mail order service.

**PLEASE NOTE** Each part of the Trilogy is a COMPLETE ADVENTURE IN ITSELF which can be played totally independently of the other two.

**REGISTERED OFFICE** 2 Minerva House, Calleva Park, Aldermaston Berks RG7 4QW  
**TRADE AND CREDIT CARD ORDERS** Telephone direct (07356) 77288

### PRIORITY ORDER FORM

Please rush me the titles as indicated for my Electron/BBC/Master Computer

**THE KET ADVENTURE TRILOGY**

TAPE £9.95 ☐

DISC £11.95 ☐

**THE GRAPHIC ADVENTURE CREATOR (BBC ONLY)**

TAPE £22.95 ☐

DISC £27.95 ☐

I enclose cheque/PO or please debit my credit card No

Name/address



INCENTIVE SOFTWARE LTD 2 Minerva House Calleva Park Aldermaston Berks RG7 4QW Tel: (07356) 77288



WHILE taking a stroll through the maze in his garden Henry VIII is attacked by a gang of man-eating monsters and desperately needs your help.

The creatures head straight for him, eating their way through the hedges which form the maze walls. Henry's only defence is to kick bits of hedge at them. If they are caught off guard they are crushed.

There are four diamonds in the maze and 200 points are given for each one kicked into a corner. Watch out though, these crazy creatures find the gems very tasty and will gobble them up given half a chance.

After clearing the screen of monsters Henry has a chance to earn a bonus.

He must run through one of his other mazes at top speed, reaching the exit at the bottom of the screen before a clock counts down to zero.

There are no monsters here, but the control keys are reversed. The quicker he completes his run the bigger the bonus awarded.

This fast and addictive multi-screen arcade game will keep you busy for quite some time, so type in the listing and give Henry a hand.

#### CONTROLS

Z	Left
X	Right
*	Up
?	Down
Space	Kick hedge

#### PROCEDURES

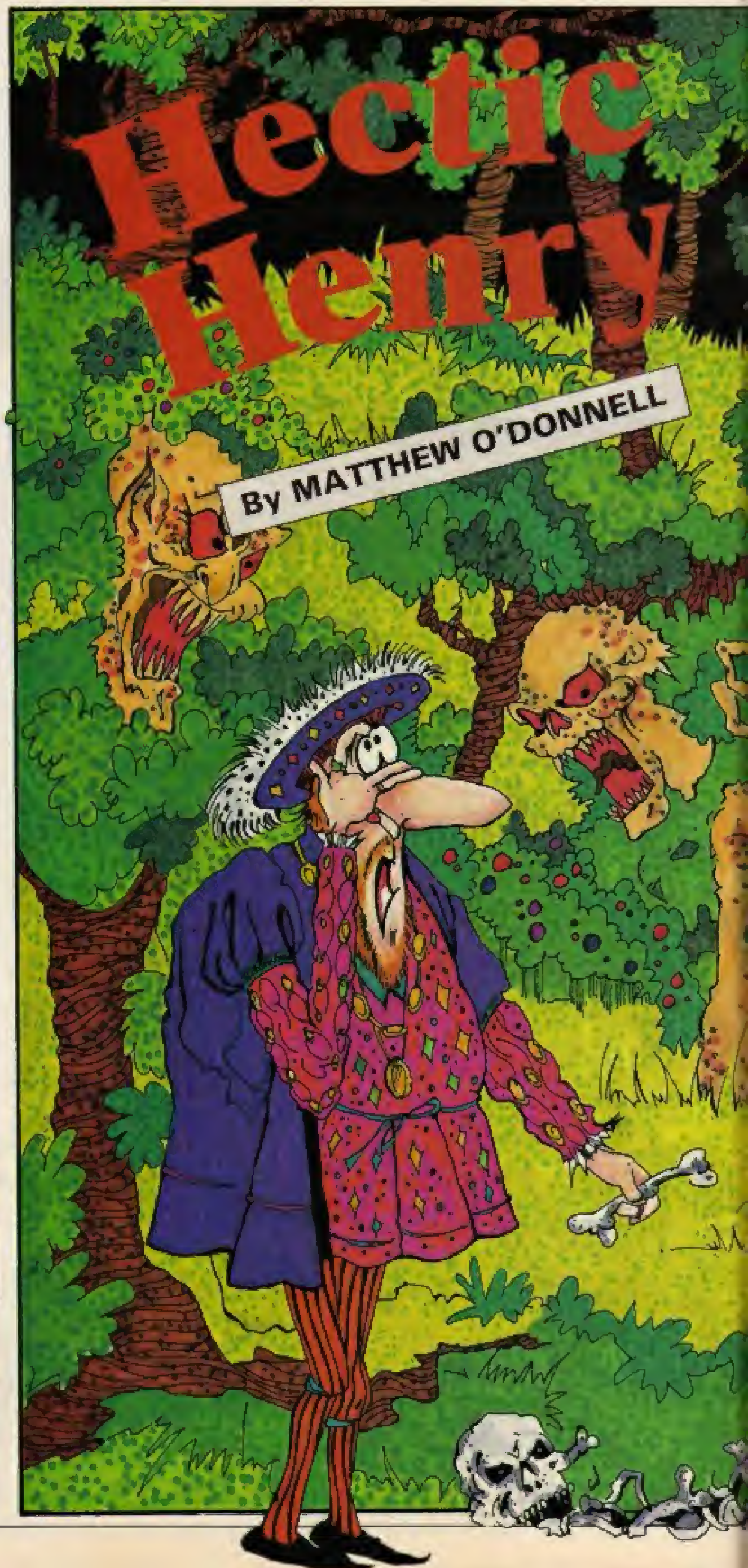
screen	Draws the screen.
M	Moves Henry.
push	Kicks a hedge.
O	Moves a monster.
T	Plays the tune.
instruct	Prints the instructions.

#### VARIABLES

score%	Score.
lives%	Lives.
Z%	Screen number.
X%,Y%	Henry's coordinates.
MON%	Number of monsters.
SC%(10)	Hi-Scores.

# Hectic Henry

By MATTHEW O'DONNELL







Lives: 2

Score: 570

2



Full listing starts  
on Page 27



If you want to start doing more with your micro than just playing games, this package is your ideal introduction to the four most popular applications for professional computers. All the programs have been designed for simplicity, so even a child can use them. Yet they include advanced features not yet available on programs costing many times as much!

**Finalist for the Home Software  
of the Year Award**



**Contains 32 page booklet giving clear,  
easy-to-follow instructions on all 4 programs**

**Word Processor:** Ideal for writing letters and reports. There is a constant display of both time and word count, plus a words-per-minute display to encourage the budding typist! A unique feature is the double-size text option in both edit and printer mode — perfect for young children and people with poor vision.

**Database:** You use this for storing information, just like an office filing cabinet. Facts you have entered can be quickly retrieved by just keying in a word or part of a word. They can be sorted, replaced, saved for future use or printed out.

**Spreadsheet:** Enables you to use your micro for home accounts or pocket money records. It creates a display of numbers in rows and columns. Continuous updating is possible, and a changed figure can be instantly reflected throughout the rest of the spreadsheet. Your results can be saved, to be used for future updates, or can be fed into its associated program . .

**Graphics:** Part of the spreadsheet section, it lets you draw bar charts, pie charts and histograms to give a graphic presentation of your statistics. Helps to give life and colour to the duller figures!

☆ **Word Processor** ☆ **Spreadsheet**  
☆ **Database** ☆ **Graphics**

**Now they're  
all together -  
in ONE simple  
package**

Four full-scale  
programs for  
an incredible  
low, low price!

**£5.95**  
cassette

Also available from:  
**BOOTS COMET Currys Dixons WHSMITH**  
**Greene** and other computer stores

**TO ORDER TURN TO THE FORM ON PAGE 53**



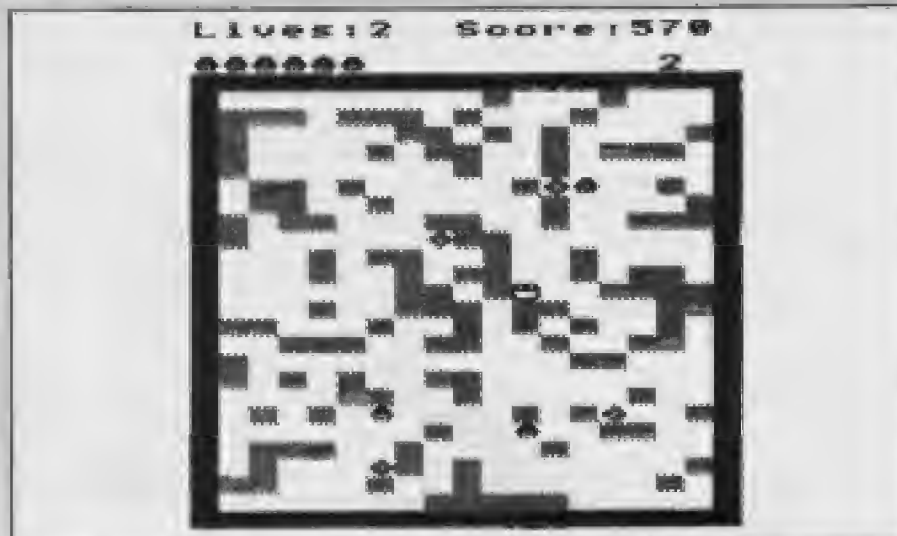
# Hectic Henry listing

## From Page 25

```

10 REM Hectic Henry
20 REM By M.O'Donnell
30 REM (c) Electron User
40 ON ERROR:IF ERR=17 RUN:E
LSE MODE6:REPORT:PRINT" at lin
e ";ERR:END
50 DIM BX(10,30),BS(3),SX2,
DX2,QX2,SX(10),NS(10)
60 PROCassembler
70 PROCchars
80 FORPX=1 TO 10:SCX(PX)=(1
3-PX)*100
90 IF PX/2=INT(PX/2):NS(PX)
="USER":ELSE NS(PX)="ELECTRON"
100 NEXT
110 MODE4:VDU23;B202;0;0;0;
120 PROCinstruct
130 MODE5:PROChighscores
140 PROCclear
150 REPEAT
160 livesX=3:ZX=1
170 scoreX=0:FX=1
180 PROCupdate:PROCinit
190 PROCscreen
200 REPEAT
210 RESTORE3600
220 REPEAT
230 FORLX=QTO2:PROCT:PROCM:P
ROCT:PROCO
240 NEXT
250 UNTILKX=TRUE OR MX=MONX
260 IF KX=TRUE PROCdead
270 IF MX=MONX PROCfinished
280 UNTILLivesX=0
290 MODE5:VDU23;B202;0;0;0;
300 PROCscore
310 IF YX=TRUE PROCinput
320 PROChighscores
330 PROCclear
340 UNTILO
350 END
360 DEFPROCscreen:PROCclear
370 FORQX=0 TO 18:FORWX=3 TO
38:BX(QX,WX)=0:NEXT:NEXT
380 IFZX<6:VDU19,3,2;0;
390 IFZX>5:IF ZX<11:VDU19,3,
5;0;
400 IFZX>10:VDU19,3,4;0;
410 PRINTTAB(16,3);ZX
420 IF ZX>5:VDU23,230,254,14
8,182,188,68,124,54,108:ELSE:V
DU23,230,28,62,54,127,99,62,42
,0
430 PROCborder
440 Q=200-(ZX*15):IF ZX>10:Q
=40
450 COLOUR3
460 FORP=1TO4
470 AX=RND(17):BX=RND(24)+4
480 BX(AX,BX)=1:PRINTTAB(AX,
BX)CHR$224
490 NEXT
500 COLOUR1
510 FORP=1TO4
520 AX=RND(10)+4:BX=RND(24)+
4
530 BX(AX,BX)=2:PRINTTAB(AX,
BX)CHR$234
540 NEXT
550 BX(XX,YX)=0:FORPX=QTO2
560 BX(SX?PX,DX?PX)=0:NEXT
570 FORPX=1TOMONX
580 PRINTTAB(PX-1,3)CHR$230;
:NEXT
590 COLOUR2:PRINTTAB(0,1)"Li
ves:"livesX
600 PRINTTAB(9,1)"Score:"sc
oreX

```



```

610 PRINTTAB(XX,YX)BS(1)
620 FORLX=QTO2
630 PRINTTAB(SX?JX,DX?JX)CHR
$230
640 NEXT
650 PRINTTAB(7,30)"Ready!"
660 PROCwait(1000)
670 PRINTTAB(7,30)SPC(6)
680 ENDPROC
690 DEFPROCchars
700 VDU23,224,170,85,170,85,
170,85,170,85
710 VDU23,225,126,219,219,25
5,129,129,195,126
720 VDU23,226,0,0,126,219,21
9,189,195,126
730 VDU23,227,126,219,219,25
5,195,129,189,126
740 VDU23,229,137,82,0,146,7
3,0,82,137
750 VDU23,232,28,28,127,127,
28,28,28,28
760 VDU23,233,254,146,182,10
8,68,56,40,108
770 VDU23,234,8,20,42,117,87
,42,20,8
780 VDU23,235,164,164,164,12
8,64,39,24,16
790 VDU23,236,85,85,119,0,25
5,0,0,0
800 VDU23,237,37,33,37,2,252
,0,0,0
810 VDU23,238,36,68,68,68,13
4,128,174,164
820 VDU23,239,221,149,221,14
8,212,0,117,85
830 VDU23,240,90,81,89,145,1
53,1,117,37
840 VDU23,241,0,0,0,0,0,3,28
,32
850 VDU23,242,0,0,0,0,0,255,
0,0
860 VDU23,243,0,0,0,0,0,224,
20,2
870 ENVELOPE1,4,1,-1,0,1,1,0
,126,0,0,-126,126,126
880 ENVELOPE2,0,-30,-20,-10,
200,70,70,0,0,0,0,0,0
890 FORP=1TO3:BS(P)=CHR$(P+2
24):NEXT
900 QS=STRING$(17,CHR$224)
910 MS=CHR$235+CHR$236+CHR$2
37+CHR$8+CHR$8+CHR$8+CHR$11+CH
R$238+CHR$239+CHR$240+CHR$8+CH
R$8+CHR$8+CHR$11+CHR$241+CHR$2
42+CHR$243
920 ENDPROC
930 DEFPROCinit
940 X=10:Y=10
950 CX=1:IX=0:KX=FALSE
960 V=1:D=1
970 IF OX?0=1:SX?0=2:DX?0=28

```

```

8
980 IF OX?1=1:SX?1=16:DX?1=2
8
990 IF OX?2=1:SX?2=16:DX?2=5
1000 IF FX=1:MONX=ZX+3
1010 IF ZX>5:MONX=(ZX-5)+3:FX
=2:IF ZX>10:MONX=15:FX=3
1020 ENDPROC
1030 DEFPROCupdate
1040 FORP=QTO2:OX?P=1:NEXT
1050 MX=0:ENDPROC
1060 DEFPROCW
1070 RX=0:TX=0
1080 IF GS="K":GOTO 1100
1090 PROCjoytick:IF 1=1:ENDP
ROC:ELSE:GOTO 1150
1100 IF INKEY(-98):IF KX>1:RX
=-1:GOTO1140
1110 IF INKEY(-67):IF KX<17:R
X=1:GOTO1140
1120 IF INKEY(-105):IF YX<28:
TX=1:GOTO1140
1130 IF INKEY(-73):IF YX>5:TX
=-1
1140 IF INKEY(-1) OR INKEY(-9
9) OR INKEY(-74):IF BX(KX+RX,Y
X+TX)>0:PROCpush:COLOUR2:ENDPR
OC
1150 D=-D:IF D=1:CX=1:ELSE CX
=2
1160 IF BX(KX+RX,YX+TX)>0:GOT
O 1190
1170 PRINTTAB(KX,YX)" "
1180 XX=KX+RX:YX=YX+TX
1190 PRINTTAB(XX,YX)BS(CX):EN
DPROC
1200 DEFPROCpush
1210 JX=KX+RX:KX=YX+TX
1220 IF BX(JX,KX)=1:S=1:COLOU
R3:ELSE:S=2:COLOUR1
1230 IF BX(JX+RX,KX+TX)>0:IF
BX(JX,KX)=1:PROCcrush:ENDPROC
1240 REPEAT
1250 PROCwait(16)
1260 PRINTTAB(JX,KX)" "
1270 IF BX(JX+RX,KX+TX)>0:JX=
1:GOTO1370
1280 BX(JX,KX)=0
1290 JX=JX+RX:KX=KX+TX
1300 BX(JX,KX)=5
1310 FORPX=QTO2:PROCT:IF JX<>
SX?PX OR KX<>OX?PX GOTO 1360
1320 IF KX<8:SX?PX=16:ELSE SX
?PX=3
1330 MX=MX+1:scoreX=scoreX+50
:COLOUR3:PRINTTAB(MX-1,3)CHR$2
32:PROCT:IF MX+2<MONX:OX?PX=33
-YX:BX(SX?PX,OX?PX)=0:ELSE:OX?
PX=0:DX?PX=0:SX?PX=0
1340 COLOUR2
1350 PRINTTAB(15,1);scoreX:IF
S=1:COLOUR3:ELSE COLOUR1
1360 NEXT

```

```

1370 IF S=1:COLOUR3:PRINTTAB(
JX,KX)CHR$224:ELSE:COLOUR1:PRI
NTTAB(JX,KX)CHR$234
1380 UNTILLX=1:IX=0
1390 ENDPROC
1400 DEFPROCcrush:BX(JX,KX)=0
1410 COLOUR1
1420 PRINTTAB(JX,KX)CHR$229
1430 PROCwait(56)
1440 PRINTTAB(JX,KX)" "
1450 ENDPROC
1460 DEFPROCcheck
1470 IF OX?LX=1 GOTO 1510
1480 E=LX:REPEAT:E=E+1:IF E=3
E=0
1490 UNTILOX?E=1 OR E=LX
1500 IF E=LX ENDPROC:ELSE LX=E
E
1510 OX=0:WX=0:NX=SX?LX
1520 UX=OX?LX:VX=ZX+5
1530 IF LX=1:PROCx:ELSE:PROCd
1540 PRINTTAB(NX,UX)" "
1550 SX?LX=OX?LX+OX:OX?LX=OX?
LX+WX
1560 OX(SX?LX,DX?LX)=0
1570 PRINTTAB(SX?LX,DX?LX)CHR
$230
1580 PROCcheck
1590 ENDPROC
1600 DEFPROCdead
1610 +FX15,0
1620 COLOUR2
1630 PRINTTAB(XX,YX)BS(3)
1640 PROCwait(200)
1650 AX=64+XX:BX=1024-(YX+32)
1660 GCOLOR,0
1670 IF livesX=1:PRINTTAB(XX,
YX-1);MS
1680 IFHS="Y":SOUND1,2,255,28
1690 FORPX=QTO100
1700 PLOT69,AX+RND(60),BX+RND
(30)
1710 NEXT
1720 livesX=livesX-1
1730 PRINTTAB(6,1);livesX
1740 IF livesX>0:BX(10,10)=0:
GOTO1700
1750 PRINTTAB(1,15);:OX=92:RE
STORE3720:FORP=1TO9:READMS,SX:
IF MS="R":PRINTMS:ELSE PRINTMS
;" "
1760 IFHS="Y":SOUND1,1,SX,4
1770 PROCwaic(230):NEXT:PROCw
aic(2000)
1780 FORPX=0 TO 2
1790 IF SX?PX<>0:PRINTTAB(SX?
PX,DX?PX)" "
1800 PRINTTAB(XX,YX)" "
1810 NEXT
1820 PROCinit
1830 ENDPROC
1840 DEFPROCfinished
1850 IF BX(1,5)=2:scoreX=scor
eX+200:PRINTTAB(2,6)"200"
1860 IF BX(17,5)=2:scoreX=scor
eX+200:PRINTTAB(14,6)"200"
1870 IF BX(1,28)=2:scoreX=scor
eX+200:PRINTTAB(2,27)"200"
1880 IF BX(17,28)=2:scoreX=sc
oreX+200:PRINTTAB(14,27)"200"
1890 COLOUR2
1900 +FX15,0
1910 IF ZX/3=INT(ZX/3):livesX
=livesX+1:COLOUR2:PRINTTAB(6,1
);livesX:SOUND1,-15,200,2:PROC
wait(1100)
1920 ZX=ZX+1
1930 scoreX=scoreX+(livesX*10

```



## Hectic Henry listing

### From Page 27

```

0)+ (ZX*10)
1940 PROCwait(1000):PROCclear:PROCb
1950 PROCupdate
1960 PROCinit
1970 PROCscreen
1980 ENDPROC
1990 DEFPROC
2000 IF HS="N" ENDPROC
2010 IF ADVAL(-6)<3 ENDPROC
2020 READu1,y2
2030 IF u1=-100:RESTORE 3680:
GOTO2010
2040 SOUND1,1,u1-56,y1/51
2050 SOUND1,0,0,0
2060 ENDPROC
2070 DEFPROC
2080 IF RND(2)=1 GOTO 2120
2090 IF SX?LX>XX:IF SX?LX>1:Q
X=-1:IF RND(VX)=1:IF SX?LX<17:
QX=1
2100 IF SX?LX<XX:IF SX?LX<17:
QX=1:IF RND(VX)=1:IF SX?LX>1:Q
X=-1
2110 ENDPROC
2120 IF DX?LX<YX:IF DX?LX<20:
WX=1:IF RND(VX)=1:IF DX?LX>5:W
X=-1
2130 IF DX?LX>YX:IF DX?LX>5:W
X=-1:IF RND(VX)=1:IF DX?LX<20:
WX=1
2140 ENDPROC
2150 DEFPROCd
2160 V=V+1:IF V=5:V=1
2170 IF SX?LX>XX:IF SX?LX>1:Q
X=-1:IF RND(2)=1:GOTO 2210
2180 IF SX?LX<XX:IF SX?LX<17:
QX=1:IF RND(2)=1:GOTO 2210
2190 IF DX?LX<YX:IF DX?LX<20:
WX=1
2200 IF DX?LX>YX:IF DX?LX>5:W
X=-1
2210 IF QX=0:IF V=1:IF SX?LX>1:
QX=-1
2220 IF QX=0:IF V=2:IF SX?LX<17:
QX=1
2230 IF WX=0:IF V=1:IF DX?LX<20:
WX=1
2240 IF WX=0:IF V=2:IF DX?LX>5:
WX=-1
2250 ENDPROC
2260 DEFPROCinstruct
2270 VDU19,1,5,0;
2280 PRINTTAB(10,12)"Instruct
ions? (Y/N)":REPEAT65=GETS:UNT
IL65="Y" OR 65="N":CLS
2290 IF 65="N" GOTO2400
2300 PRINTTAB(11,1)"Hectic He
nry!"
2310 PRINT"Henry will be t
aking a stroll through the
maze in his garden when he was
ambushed by a gang of man-
eating monsters."
2320 PRINT"Henry can kill t
hem by kicking the hedges a
nd crushing them. The monsters
can eat through any statio
nary hedges."
2330 PRINT"there are 4 diam
onds hidden in the maze"and
you are given 200 points for
each one you manage to kick
into a corner of the maze."
2340 PRINTTAB(14,29)"Press SP
ACE":REPEATUNTILGET=32:PROCcle
ar:CLS

```

```

2350 PROCclear:CLS
2360 PRINT"In between each s
creen there is a bonus"game
. Henry starts at the top left
of the screen and must be
guided through the maze to
the exit at the bottom."
2370 PRINT"there are no mon
sters but the controls are
reversed. The quicker you comp
lete this screen the bigger
bonus you get."
2380 PRINT"You are awarded
an extra life every four scr
eens."
2390 PRINTTAB(14,29)"Press SP
ACE":REPEATUNTILGET=32
2400 PROCclear:CLS
2410 PRINT
2420 PRINT"Keys: ""Z "" LEFT
""X "" RIGHT
""UP
""DOWN
2430 PRINT"SPACE/RETURN/SHIF
T "" KICK HEDGE
"" OR HS="N"
2440 ENDPROC
2450 DEFPROCjoystick
2500 DEFPROC
2510 I=0

```

This is one of hundreds of  
programs now available  
FREE for downloading on

**MicroLink**

```

2520 IF ADVAL(1)>40000:IF X1>
1:RX=-1:GOTO2560
2530 IF ADVAL(1)<11000:IF X1<
17:RX=1:GOTO2560
2540 IF ADVAL(2)<11000:IF Y1<
20:TX=1:GOTO2560
2550 IF ADVAL(2)>50000:IF Y1>
5:TX=-1
2560 IF ADVAL(0) AND 1 OR ADV
AL(0) AND 2:IF BT(X1+RX,Y1+TX)
>0:PROCpush:I=1:COLOUR2
2570 ENDPROC
2580 DEFPROCstart
2590 PRINTTAB(1,27)"Press SPA
CE or FIRE""SPE(67) to start"
2600 GS="":REPEAT
2610 IF ADVAL(0) AND 1:GS="J"
2620 IF INKEY(-99):GS="K"
2630 UNTILGS<>"
2640 ENDPROC
2650 DEFPROCscore
2660 YX=FALSE
2670 IF scoreX<=SCX(10):ENDPR
OC
2680 FORPX=1 TO 10
2690 IF scoreX>SCX(PX):T=PX+1
:PX=10:YX=TRUE
2700 NEXT
2710 FORPX=10 TO 1 STEP -1
2720 SCX(PX)=SCX(PX-1)
2730 NS(PX)=NS(PX-1)
2740 NEXT
2750 ENDPROC
2760 DEFPROCinput

```

```

2770 VDU19,3,4,0;
2780 COLOUR1:PRINTTAB(2,1)"CO
NGRATULATIONS!"
2790 COLOUR3:PRINTTAB(1,5)"Yo
u have earned a "" place i
n the "" hi-score table"
2800 PRINTTAB(2,17)"Enter you
r name"
2810 COLOUR129:COLOUR2:PRINTT
AB(5,13):SPC(9)
2820 PRINTTAB(5,13)";
2830 +FX15,0
2840 AX=0:XX=0:YX=0B:2880=02
0:28801=0B:28802=9:28803=32:28
804=127:CALL&FFFF1
2850 SCX(T-1)=scoreX:NS(T-1)=
$8020
2860 PROCclear
2870 ENDPROC
2880 DEFPROChighscores
2890 VDU23,0202,0,0,0:VDU19,
3,4,0;
2900 COLOUR128:COLOUR2
2910 PRINTTAB(6,1)"HI-SCORES"
":finX=1
2920 FORP=1 TO 10
2930 COLOUR1:PRINT"";SCX(P)
:SPC(1):COLOUR3:REPEATPRINT":
UNTILPOS=9:COLOUR2:PRINTSPC
(1):NS(P)
2940 NEXT
2950 PROCstart
2960 ENDPROC
2970 DEFPROCcheck
2980 FORHX=0TO2:IF SX?HX=X1:1
F DX?HX=Y1:IF DX?HX=1:KX=TRUE:
LX=2
2990 NEXT
3000 ENDPROC
3010 DEFPROCwait(wait2)
3020 FORQ=0TOwaitX
3030 NEXT
3040 ENDPROC
3050 DEFPROCclear
3060 2674=0:FORM=0TO7:2670=W:
CALLclear:NEXT
3070 ENDPROC
3080 DEFPROCassembler
3090 DIM BA 50
3100 FORP=0 TO 2 STEP 2
3110 PX=0A
3120 [OPT P
3130 .clear:LDA#658:STA671
3140 LDA#0:STA672:STA673
3150 .loop:CLC:LDA670:ADC#8
3160 STA670:LDA671:ADC#80
3170 STA671:LDA674:LDY#0
3180 STA(670),Y:INC672
3190 LDA672:CMP#40:BNE loop
3200 .add:INC673:LDA#0:STA672
3210 LDA673:CMP#37:BNE loop
3220 RTS:]
3230 NEXT
3240 ENDPROC
3250 DEFPROCb
3260 OFX=FX:FX=3
3270 COLOUR3:PRINTTAB(4,14)"B
ONUS GAME!"
3280 PROCwait(900):CLS
3290 PROCborder
3300 COLOUR2:PRINTTAB(2,2)"BO
NUS:"
3310 PRINTTAB(18,20)"":0X(10
,28)=0
3320 FORX=1TO17:FORY=5TO28:
BX(X,Y)=0:NEXT:NEXT
3330 XX=1:YX=5:TX=2000
3340 COLOUR3:COLOUR129
3350 FORPX=8 TO 26 STEP 2
3360 WX=RND(13)+2:FORTX=1TOWX

```

```

-1:PRINTTAB(TX,PX)CHR$224:BX(T
X,PX)=1:NEXT
3370 FORTX=WX+1 TO 17:PRINTTA
B(TX,PX)CHR$224:BX(TX,PX)=1:NE
XT
3380 NEXT:COLOUR128
3390 XX=1:YX=5:TX=1100:aX=1:b
X=0:COLOUR2:REPEAT:CX=CX+1:IF
CX=3:CX=1
3400 PROC
3410 aX=0:bX=0
3420 IF 64="J":PROCbjoy:60703
470
3430 IF INKEY(-98):aX=1:bX=0
3440 IF INKEY(-67):aX=-1:bX=0
3450 IF INKEY(-105):aX=0:bX=-
1
3460 IF INKEY(-73):aX=0:bX=1
3470 PRINTTAB(X1,Y1)
3480 XX=XX+aX:YX=YX+bX:IF BX(
XX,YX)=1:XX=XX-aX:YX=YX-bX
3490 PRINTTAB(XX,YX)BS(CX)
3500 TX=TX-5:COLOUR3:PRINTTAB
(8,2):TX="":COLOUR2
3510 UNTILX=18 AND YX=28 OR
TX=0
3520 VDU28,4,17,16,15
3530 CLS
3540 IF TX=0:IF XX<10:IF YX<2
0:COLOUR2:PRINTTAB(1,1)"BONU
S":TX=scoreX+score1+TX
3550 FORP=0TO2000:NEXT
3560 PROCclear
3570 VDU26:FX=0FX
3580 ENDPROC
3590 DEFPROCborder
3600 COLOUR130:COLOUR1:FORPT=
4 TO 29:PRINTTAB(0,PX)CHR$224:
PRINTTAB(18,PX)CHR$224:BX(0,PX
)=1:BX(18,PX)=1:NEXT:FORPX=0 T
O 18:PRINTTAB(PX,4)CHR$224:PRI
NTTAB(PX,29)CHR$224:BX(PX,4)=1:
BX(PX,29)=1:NEXT
3610 COLOUR128:ENDPROC
3620 DEFPROCbjoy
3630 IF ADVAL(1)>40000:aX=1:b
X=0
3640 IF ADVAL(1)<11000:aX=-1:
bX=0
3650 IF ADVAL(2)<11000:aX=0:b
X=-1
3660 IF ADVAL(2)>50000:aX=0:b
X=1
3670 ENDPROC
3680 DATA88,6,100,12,100,6,11
6,9,120,3,116,6,100,12,96,6,80
,9,80,3,96,6,100,12,88,6,80,9,
84,3,88,6,96,12,84,6
3690 DATA60,12,88,6,100,12,10
8,6,116,9,120,3,116,6,100,12,9
6,6,80,9,88,3,96,6,100,9,96,3,
88,6,84,9,76,3,84,6
3700 DATA 88,10,88,10,120,10,
120,9,124,3,116,6,100,12,96,6,
80,9,88,3,96,6,100,12,88,6,88,
9,84,3,88,6,96,12,84,6
3710 DATA60,10,120,10,120,9,1
24,3,116,6,100,12,96,6,80,9,88
,3,96,6,100,9,96,3,88,6,84,9,7
6,3,84,6,88,10,88,12,-100,1
3720 DATA"6",100,"N",100,"N",
116,"E",120,"-",120,"O",120,"V",
116,"E",100,"R",100

```

This listing is included in  
this month's cassette  
tape offer. See order  
form on Page 53.



## Do plots for pretty pictures

BY now you should be fairly familiar with PLOT. We've seen how PLOT 4 and 5, followed by the appropriate coordinates, does the same job as our old friends MOVE and DRAW.

From there we went on to learn the difference between relative and absolute coordinates. Next we found out about other PLOTS which allow us to draw in the background colour and even produce dotted lines.

This month we'll be looking at another family of PLOT commands, this time one that allows you to produce single dots. They're shown in Table I.

These are similar to our previous two PLOTS, the ones for drawing solid and dotted lines. In fact, you can produce the codes for single dot PLOTS by adding 64 to the codes we had for solid line PLOTS.

All our families of PLOTS have this in common: They all do the same thing, but in slightly different ways depending on the offset added.

PLOT 5 draws a solid line, PLOT 21 (5+16), produces a dotted line while PLOT 69 (5+64), gives one solitary dot with the coordinates following these being taken as absolute. Table II shows the PLOT codes for each family.

But what use is a single dot you might ask? Well,

using a lot of them allows us to produce some rather nice effects, as we'll see in the four programs this month.

We'll start with Program I which produces an outline of a rectangle.

While it's not the most efficient program (can you improve it?), it does show dot PLOTS in action.

Line 20 puts the Electron into Mode 5, the four colour graphics mode. All the coordinates for the rectangle are held in the DATA lines, 100 to 130, and it's from these lines that the READ commands take values.

The first of these, in line 40, puts 300 in x and 100 in y. The PLOT 68 of the next line moves the graphics cursor to point 300,100. This is to be the bottom left corner of our rectangle.

The program now enters the REPEAT...UNTIL loop formed by lines 60 to 90.

This cycles until it meets the rogue data values in line 140.

For each time round the loop another set of coordinates is read into x and y and a solitary dot produced by the PLOT 69 of line 80. The result of all this is an outline of a rectangle.

Ok, so this isn't too spectacular but from it you should be able to see how dots can be used to slowly build up figures.

Program II, effectively a souped-up version of Program I, shows this in more detail.

With this, the body of Program I is put into a procedure, PROCbox. This is called four times between lines 30 and 90 with the intervening:

```
wait$=GET$
```

just there to hold things up until a key is pressed. Leave them out and see what

happens.

The workings of PROCbox itself should be easily understood. The RESTORE of line 190 just allows the same data to be used each time PROCbox is called. The PLOT 4 of line 140 could be a PLOT 68. Either way the graphics cursor is MOVED to x, y.

Which PLOT code is used to draw which type of line (or dot) depends on the parameter code.

The first time PROCbox is invoked in line 30, code is 69 so we get a dot outline of a

Code	Action
64	Move relative to last point.
65	Draw relative to last point.
67	Draw relative in background.
68	Move absolute.
69	Draw absolute.
71	Draw absolute in background.

Table I: How to get single dots

Solid	Dotted	One dot	Action
0	16	64	Move relative to last point.
1	17	65	Draw relative to last point.
3	19	67	Draw relative in background.
4	20	68	Move absolute.
5	21	69	Draw absolute.
7	23	71	Draw absolute in background.

Table II: PLOTS - the story so far

```
10 REM Program I
20 MODE 5
30 x=0:y=0
40 READ x,y
50 PLOT 68,x,y
60 REPEAT
70 READ x,y
80 PLOT 69,x,y
90 UNTIL x<0
100 DATA 300,100,500,100,700
,100,900,100
110 DATA 900,300,900,500,900
,700
120 DATA 900,900,700,900,500
,900,300,900
130 DATA 300,700,300,500,300
,300,300,100
140 DATA -1,-1
```

Program I

```
10 REM Program II
20 MODE 5
30 PROCbox(69)
40 wait$=GET$
50 PROCbox(71)
60 wait$=GET$
70 PROCbox(69)
80 wait$=GET$
90 PROCbox(5)
100 END
110 DEF PROCbox(code)
120 x=0:y=0
130 READ x,y
140 PLOT 4,x,y
150 REPEAT
160 READ x,y
170 IF x>0 THEN PLOT code,x,
y
180 UNTIL x<0
190 RESTORE
200 ENDPROC
210 DATA 300,100,500,100,700
,100,900,100
220 DATA 900,300,900,500,900
,700
230 DATA 900,900,700,900,500
,900,300,900
240 DATA 300,700,300,500,300
,300,300,100
250 DATA -1,-1
```

Program II



# Graphics

## From Page 29

rectangle. Once a key is pressed, the program goes on to summon PROCbox again, this time with a parameter of 71.

Now dots are produced in the same places but these dots are in the background colour. Our outline is effectively erased.

Not for long, though. Another keypress has our dotty rectangle appearing again (code being 69) while yet another has a rectangle of solid lines (code of 5) to finish things off.

Simple as it is, Program II does show the use of various PLOTs inside the same procedure. Can you vary it so that dotted lines appear before the solid ones?

Try using the same idea to

make a line drawing slowly emerge from the background in a series increasing numbers of dots.

You could even have a go at a simple join-the-dots program, emulating the kind of thing you get in kids' comics. And when you're tired of all that you can go on to our final two programs for this month, Programs III and IV.

Both of these use our dot plots to produce pretty patterns on the screen. Program III just sprinkles a lot of coloured dots all over. To my imagination it's like stars in the sky. If you want to see them twinkle, change line 40 to:

```
40 logical=RND(16)-1
```

Program IV, while a bit

```
10 REM Program III
20 MODE 2
30 FOR loop=1 TO 200
40 logical=RND(8)-1
50 GCOL 0,logical
60 x=RND(1279):y=RND(1023)
70 PLOT 69,x,y
80 NEXT loop
90 VDU 23,1,0;0;0;0
```

Program III

more sophisticated, uses the same technique to produce a series of concentric, circular bands of colour. I'll leave it to you to figure out how it does it. Notice the "black hole" in the centre.

Once you've understood how it works - and yes, it can be made faster - exercise your imagination and alter it. It seems just made for palette switching (remember VDU19?). And

```
10 REM Program IV
20 MODE 2
30 VDU 29,640;512;
40 FOR logical=0 TO 7
50 GCOL 0,logical
60 FOR loop=1 TO 100
70 angle=RND(361)-1
80 angle=RAD(angle)
90 radius=RND(50)+logical*5
100 x=radius*COS(angle)
110 y=radius*SIN(angle)
120 PLOT 69,x,y
130 NEXT loop
140 NEXT logical
150 VDU 23,1,0;0;0;0
```

Program IV

how about a message appearing in the centre?

● That should keep you occupied until next time when we'll be taking another look at yet another set of PLOTs, those dealing with triangles.

## C & F ASSOCIATES BARGAIN PRICE ELECTRON SOFTWARE

Title	RRP	OUR PRICE	Title	RRP	OUR PRICE	Title	RRP	OUR PRICE
Superior Collection 3	9.95	7.75	Thunderstruck 2	7.95	6.75	Mini Office	5.95	4.95
Yie Ar Kung Fu II	8.95	7.20	Rick Hanson Trilogy	23.95	18.95	Treasure Hunt	9.95	7.50
Acornsoft Hits I	9.95	7.75	Micro-Power Magic	7.95	6.75	Word Games with Mr Men	9.95	7.50
Acornsoft Hits II	9.95	7.75	Giddy Game Show	9.95	7.50	Magic Storymaker	9.95	7.50
French on the Run	9.95	7.75	Quick Thinking	8.95	5.95	1st Steps with Mr Men	8.95	6.95
Brian Clough Football Fortunes	14.95	12.95	Rebel Planet	7.95	6.75	Here & There Mr Men	7.95	6.50
The Big K.O.	7.95	6.75	Kayleth	7.95	6.75	Wheel of Fortune	8.95	6.95
Footballer of the Year	9.95	7.75	Jet Set Willy 2	7.95	6.75	Quest/Holy Grail	6.95	5.95
Elite	12.95	10.95	Goal	7.95	6.75	Castle Frankenstein	6.95	5.95
Colosuss Chess IV	9.95	7.75	Mouse Trap	7.95	6.50	Kingdom of Klein	6.95	5.95
Ravenskull	9.95	7.75	Rick Hanson	9.95	7.95	Terrormolinos	9.95	7.50
Repton 3	9.95	7.75	Project Thesius	9.95	7.95	Dynabyte Collection	7.99	3.95
Gala Force	9.95	7.50	Myorem	9.95	7.95	Action Pack	4.99	4.50
Future Shock	7.95	6.75	Phantom Combat	9.95	7.50	Chip Buster	7.95	4.95
Psychastria	7.95	6.75	5 Star Games	9.95	7.75	Thai Boxing	5.95	4.95
Thrust	7.95	6.50	Strike Force Harrier	9.95	7.50	Micro Olympics	5.95	4.95
Mikie	8.95	6.95	Winter Olympics	7.95	6.50	League Challenge		2.95
Impossible Mission	8.99	7.20	Beach Head	8.95	6.95	Plan B		2.95
Commonwealth Games	7.95	6.50	Adventure Creator	14.95	12.95	Ice Hockey		2.95
Commando	9.95	7.50	The Quill	16.95	14.95	Sky Hawk		2.95
Citadel	9.95	7.50	Power Pack	9.95	7.75	Flight Path 737		2.95
Crystal Castle	9.95	7.75	Brian Jacks	7.95	3.95	Crazy Erbert		1.99
Dodgy Geezers	8.95	6.95	Geoff Capes	8.95	3.95	Bomber Baron		1.99
Exploding Fist	9.95	7.50	Stairway to Hell	12.95	8.95	Vegas Jackpot		1.99
Yie Ar Kung Fu	8.95	6.95	Football Manager	8.95	6.95	Quest for Freedom		1.99
Thunderstruck	7.95	6.75	Southern Belle	7.95	6.50	Nightstrike		1.99
Last of the Free	7.95	6.75	Ian Botham Test Match	7.95	6.50	Tarzan Boy		2.95
10 Computer Hits 3	9.95	7.75	Steve Davis Snooker	8.95	6.95	Video Pinball		1.99
Jet Set Willy	7.95	6.50	Blockbusters	7.95	6.50			

Orders normally despatched by First Class Post on day of receipt. But allow max. of seven days. All prices include VAT & P&P (Overseas orders add £1)

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 \_\_\_\_\_  
 Make of Computer \_\_\_\_\_

Title \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Total \_\_\_\_\_

Access orders accepted  
 Make PO/Cheques payable to:  
**C & F ASSOCIATES**  
 and send to:  
**C & F ASSOCIATES**  
 PO BOX 2  
 BIDEFORD EX39 3RE.  
 Tel: (022 73) 619





# More great Electron games

This month we introduce a new volume in our Ten of the Best series – 10 more games to give you many hours of fun and entertainment.

These four packages are crammed with the best games from the last two years of Electron User. As an added bonus a previously unpublished game has been added to each one – stunning machine code masterpieces from our technical wizard, Roland Waddilove.

So give yourself a treat... with the most popular games compilations we've ever produced.



ONLY  
**£5.95** tape  
**£6.95** 3½" disc

## Volume 1

**Jam Butty:** Machine code simulation of high drama on a building site.  
**Golf:** Play a round by yourself, or play against your pals.  
**Haunted House:** Fight against all the odds to get out alive.  
**Space Hike:** Another classic. Help the spaceman avoid marauding monsters.  
**Park's Peril:** Help Parky through an invisible maze, racing against time.

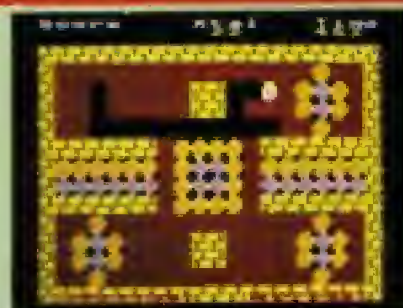
**Rally Driver:** All the thrills of high-speed driving with none of the risks.  
**Alphaswap:** Your letters are in a twist. Can you put them in order.  
**Knockout:** Fast and furious action as you batter down a brick wall.  
**Money Maze:** Avoid ghosts and collect coins in an all-action arcade classic.  
**Lunar Lander:** The traditional computer game specially written for the Electron.

## Volume 2

**Atom Smash:** Machine code thrills as you help to save the world from destruction.  
**Bunny Blitz:** Go egg collecting, but keep away from proliferating rabbits.  
**Castles of Sand:** Build castles – but beware the rising tide and hungry sandworms.  
**Reaction Timer:** Test your reactions with this traffic lights simulation.  
**Solitaire:** The Electron version of the age-old game

of logic and patience.  
**Jumper:** Jump for your life in this exciting arcade action game.  
**Break free:** Test your wits and reflexes in this popular classic ball game.  
**Code breaker:** Crack the code in a colourful if frustrating brainteaser.  
**Parachute:** Save the plunging sky divers from a watery end.  
**Star fighter:** Attack the bandit ships in this fast-moving 3D punch up.

## Volume 3



**Rockfall:** Come diamond mining in this fun packed game with its own screen designer.  
**Karate Warrior:** Win your black belt in this gruelling test of karate skill.  
**Grand Prix:** Battle your way into the lead in this tricky racing simulation.  
**Invasion Force:** Can you survive wave after wave of relentlessly advancing aliens.  
**Greblit:** Guide the frog across the busy road then across the fast-flowing river!

**Fruit Worm:** Steer the worm towards the fruit while avoiding rocks and its ever-growing tail.  
**Manic Mole:** Watch out for melting platforms and conveyor belts in your quest for jewels.  
**Skramble:** Fly your fighter fast and low over the landscape to penetrate enemy territory.  
**Mr. Freeze:** You'll need speed and strategy to reach the ice blocks before they melt away.  
**Paint Roller:** Steer a speeding roller, run over paint pots but keep clear of the rocks.

## Volume 4

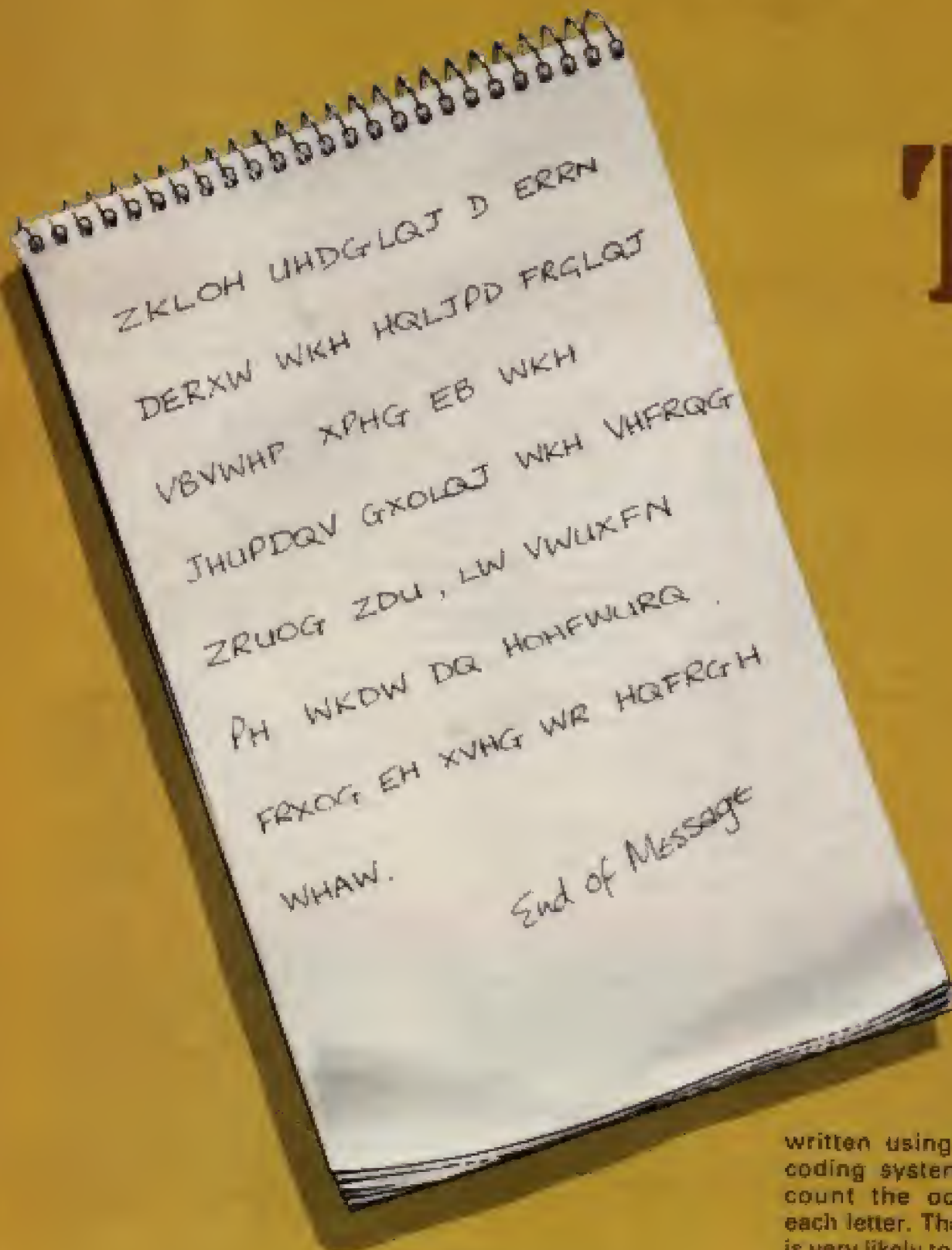


**Lunar Invasion:** Defend the moon from wave after wave of marauding aliens in this superb multi-screen arcade game.  
**Howzat:** Try not to get caught out in this vivid recreation of a day's test cricket.  
**Snapdragon:** Enjoy this two-player micro version of the familiar card game.  
**Day at the Races:** Fancy a flutter? You can bet your shirt in safety in this two-player horse racing game.  
**Reversi:** Combine cunning and chance as you try to out-think your Electron at this classic

board game.  
**Fishing:** Relax and enjoy a quiet afternoon by a shady brook. You'll regret if you let this one get away.  
**Cavern Capers:** Escape from the depths of the planet by blasting oil drums and dodging deadly fireballs.  
**Craal:** Escape from the maze and win the beautiful princess in this superb text adventure.  
**Oxo:** High strategy meets low cunning in a logic game to strain your brain.  
**Missile Attack:** Defend your city from a missile invasion and save it from certain doom.

TO ORDER TURN TO THE FORM ON PAGE 53





# The en Elect

**JOE PRITCHARD presents a program to turn you into a coding machine**

WHILE reading a book about the Enigma coding system used by the Germans during the Second World War, it struck me that an Electron could be used to encode text.

This could be used to hide sensitive information and reports stored in word processor files, text files sent down the phone lines or data in computer programs.

Of course, the CIA, NSA and GCHQ have been using computers for code making and breaking for many years, and the system used in this article is comparatively simple.

However, it is still a reasonable way of encoding text, and may well provide you with the inspiration to develop your own coding system.

The simplest method is a substitution cipher, where one letter is replaced by another.

For instance, a simple cipher system might be:

A B C D E F . . . Z  
B C D E F G . . . A

where each letter is displaced one to the right - A becomes B, B becomes C and so on.

If we had a word like ELECTRON in plain text, we could put it into code by replacing E with F, L with M and so on, giving us the ciphered word FMFDUSPO.

Anyone who has read the Edgar Allan Poe short story The Gold Bug will recognise this type of code. This method of keeping the meaning hidden is easily defeated, as was shown by the hero in the story.

In most pieces of English text, as long as they're of reasonable length, the most common letter is 'e', closely followed by a, o, i.

So, to crack a piece of encoded text that's been

written using this simple coding system we simply count the occurrence of each letter. The commonest is very likely to be 'e' in plain English. The other letters can also be arrived at by similar means.

More letters can be filled in when several letters have been obtained. For instance, if we have:

Encoded text: FRVJV

Plain text: ?here

the chances are that the word is 'there'. This means that 'f' in the coded text will be 't' in plain text. We can now go through the rest of the encoded text and replace every occurrence of 'f' with a 't'.

As we've seen, this method of encoding text is rather easily broken. It would be better if we could arrange some system such that the first time 'e' turned up in the plain text it was replaced by 'a', the second time 't', then 'x' and so on. In other words, each subsequent occurrence of the letter 'e' is replaced by a randomly selected letter.

In this situation, counting the letters won't help the code breaker. Each letter in the text will have been replaced by a random letter each time it occurred in the coded message.

The person to whom the message is addressed must be able to decode it. How can he or she do this if the original message has been scrambled randomly?

The secret is to use a pseudo-random sequence to code the message. This is a sequence of letters or numbers that looks random but is, in fact, predictable from a mathematical equation.

This is exactly how the Electron generates its random numbers. They aren't in fact random at all, just a very complex sequence.

A seed value is used to start off the random number generator and the result is used as the next seed. Each seed will always produce the same pseudo random sequence providing a predictable source of random numbers.

Using this as the basis of a coding system, I have used the Exclusive OR function (EOR), to scramble the text.

This will be familiar to most of you from graphics work and has the following effect on a binary number:

01010110  
EOR 11110010  
-----  
10100100



# Stigmatic Iron...

presents a  
your micro  
nine



A one is present in the result only if the two binary digits being EORed are different.

In addition, EORing the result with one of the numbers in the expression gives you the other number in the expression:

```

10100100
EOR 01010110
-----
11110010

and

10100100
EOR 11110010
-----
01010110
    
```

If we have our text in a string we can look up each letter's Ascii code, EOR it with a number and store the

result in a second string. The second string will then contain a coded version of the text.

To recover the original text we simply EOR the coded string with the same number again, and this will recover the original message.

Combine this technique with the random number function and you have a

rather nice coding system.

Program I encodes a string, putting it into *code\$*. As this scrambled text may contain some control characters - Ascii codes less than 32, it's not advisable to attempt to print it.

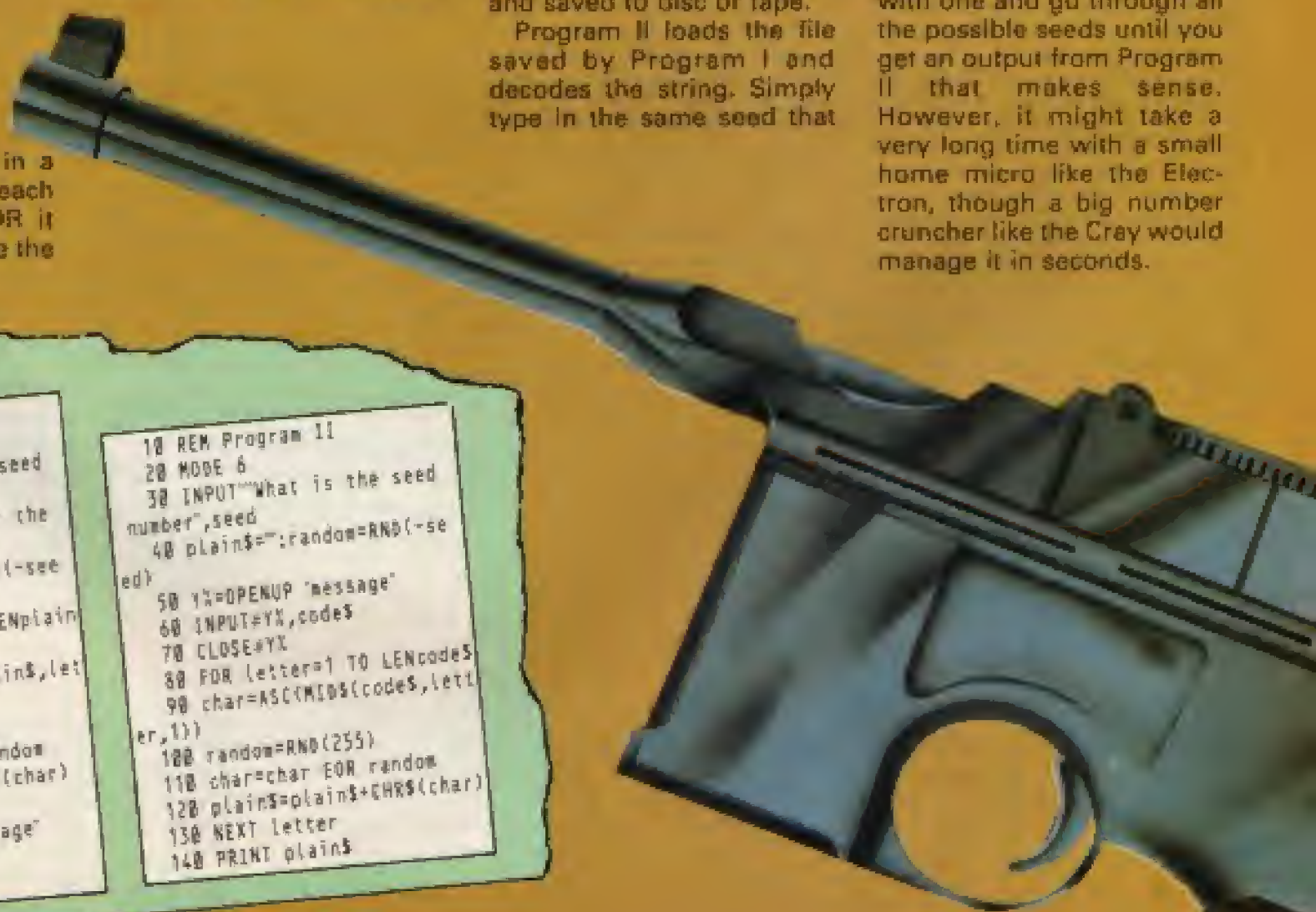
To use the program, enter a seed value when prompted, the higher the number the better, then type in your text. It will be coded and saved to disc or tape.

Program II loads the file saved by Program I and decodes the string. Simply type in the same seed that

you entered into the encoding program and out will come the original text.

Of course, the users of the two programs need to know the correct seed to code and decode the message. This could be agreed in advance, or based on the day of the week, mother's birthday, and so on.

The code is breakable by quite crude means: Start off with one and go through all the possible seeds until you get an output from Program II that makes sense. However, it might take a very long time with a small home micro like the Electron, though a big number cruncher like the Cray would manage it in seconds.



```

10 REM Program I
20 MODE 6
30 INPUT "What is the seed
number",seed
40 INPUT "Please enter the
text: plain$
50 code$=":random=RND(-seed)
60 FOR letter=1 TO LEN(plain$)
70 char=ASC(MID$(plain$,letter,1))
80 random=RND(255)
90 char=char EOR random
100 code$=code$+CHR$(char)
110 NEXT letter
120 Y%=OPENOUT "message"
130 PRINT#Y%,code$
140 CLOSE#Y%
    
```

```

10 REM Program II
20 MODE 6
30 INPUT "What is the seed
number",seed
40 plain$=":random=RND(-seed)
50 Y%=OPENUP "message"
60 INPUT#Y%,code$
70 CLOSE#Y%
80 FOR letter=1 TO LEN(code$)
90 char=ASC(MID$(code$,letter,1))
100 random=RND(255)
110 char=char EOR random
120 plain$=plain$+CHR$(char)
130 NEXT letter
140 PRINT plain$
    
```



The most adventurous and original way  
to test your French ever devised.



# FRENCH

on the  
RUN!



**The adventure game  
with a big difference.**

**£9.95**  
cassette

**You're on  
your own in  
Occupied  
France —  
facing the  
toughest test  
that a British  
pilot has  
ever had to  
experience!**

The year is 1943. As an RAF officer stranded in Occupied France you have one aim — to get back to Britain.

The only way to do this is to try to pass as a Frenchman, but if your French isn't good enough you risk capture and interrogation by the police or even the Gestapo.

Even the simplest tasks — from buying food to taking buses — place you at risk. And to add to your problems you've got limited funds: "Should I hitch a lift or take the train?", "Do I sell my belongings or get a job?"

Whatever you decide to do, time is short. And there are always people willing to denounce you ...

French on the Run is that rare combination: A truly educational program that's also a thoroughly enjoyable game. This text adventure not only tests your grammar and vocabulary, but your knowledge of France and the French way of life.

And as your French improves the language problems get harder and the situations become progressively more dangerous. There are four routes to complete in sequence — you need the password from the last before attempting the next. The standard of French required is about O level, though on the last route it rises to just below A level.

**And there's a chance for you to try out the French you'll learn in practice:  
We are offering a FREE WEEKEND IN PARIS as a prize to the first person to  
get back to England alive, having broken a code near the end of the final route.**

*For teachers: French on the Run uses multi-choice questions with randomised distractors, all carefully chosen to illustrate linguistic points or points concerning things French. The program is meant for individual assessment, but can be used just as effectively for classroom work. A sealed envelope contains details of how the secret passwords are created.*

DATABASE SOFTWARE

**TO ORDER TURN TO THE FORM ON PAGE 53**



# Slanted Text

WANT to know how to scroll the screen? Den Miller shows you how with an impressive machine code scrolling routine complete with demonstration – all crammed into 10 lines. You can use the code to spice up your own programs or simply sit back and watch the demonstration.

\*\* Place your message  
e here \*\*\*\* Place yo  
ur message here \*\*\*\*  
Place your message  
here \*\*\*\* Place your  
message here \*\*\*\* p  
lace your message he  
re \*\*\*\* Place your m  
essage here \*\*\*\* Pla  
ce your message here  
\*\*\*\*

```
1 REM Slanted Text
2 DIM% B:FOR% B=0 TO 1:PX=0
3 CPTB
4 :scroll LDY#1:loop LDA(
  870),Y:DEY:STA(870),Y:INY:INY:
  CPTB:BNELoop
5 LDY#0:LOA870:STA872:LOA8
  71:STA873:CLC:ADC#1:STA871:LOA
  870:ADC#64:STA870:LOA871:ADC#0
  :STA871
6 LDY#0:LOA(870),Y:LDY#7:S
  14(872),Y:LOA872:STA870:LOA873
```

```
:STA871:LOA870:CLC:ADC#8:STA87
0:LOA871:ADC#0:STA871:CMPE870:
BNEScroll:RTS:]
7 NEXT:READA$:CX=1:Y=0:MO
DES:VDU23;0202;0;0;0:REPEAT:
871=850:7470=0:PRINTTAB(X,27)
MID$(A$,CX,1):CX=CX+1:IF CX=1=L
ENAS: CX=1
8 X=X+1:IF X=20:X=0
9 CALLScroll:UNTIL0
10 DATA** Place your messag
e here **
```

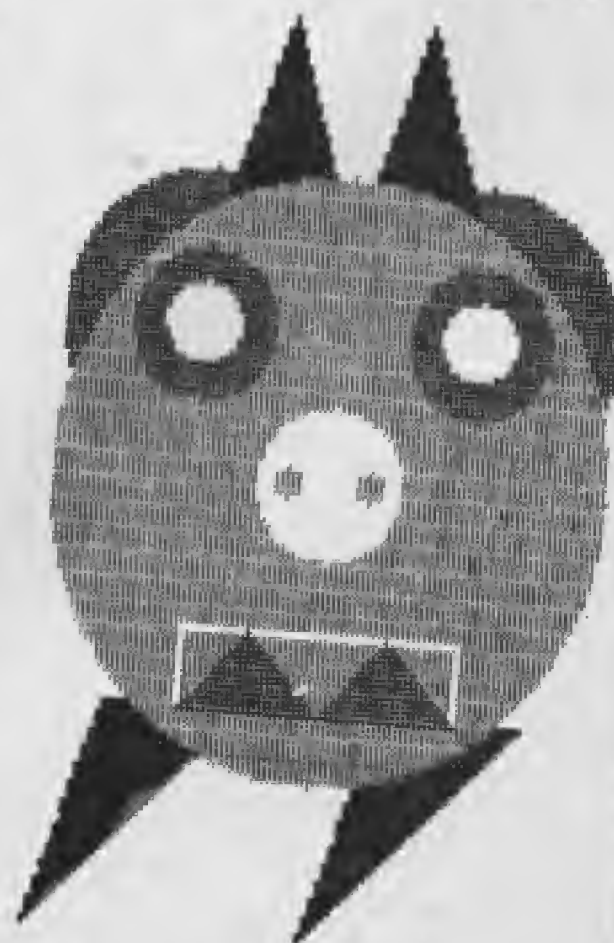
# Bug

WHAT can you do with a few circles and triangles? Lee Harland shows what can be created with a little imagination. A large, colourful creepy crawly is drawn followed by a brief message. Take no notice of what it says, the only bug in this program is the one drawn on the screen.

```
1 REM Bug
2 REM By Lee Harland
3 DSCLIFX16:MODE1:VDU23,
  1,0;0;0;0:PROCEARS:PROCFEET:M
  OVE500,650:MOVE600,650:PLOT85,
  550,800:MOVE600,650:MOVE700,65
  0:PLOT85,650,800:GCOLOR,1:PROCC
  (600,500,200):GCOLOR,2
4 PROCC(500,600,50):PROCC(
  700,600,50):GCOLOR,0:PROCC(500,
  600,25):PROCC(700,600,25):PROCC
  (600,500,50):GCOLOR,1:PROCC(57
  0,500,10):PROCC(630,500,10)
5 DEF PROCEARS:GCOLOR,2:PROCC
  (700,600,100):PROCC(500,600,
  100):GCOLOR,0:ENDPROC
6 DEF PROCFEET:GCOLOR,3:MOV
  E450,350:MOVE400,200:PLOT85,55
```

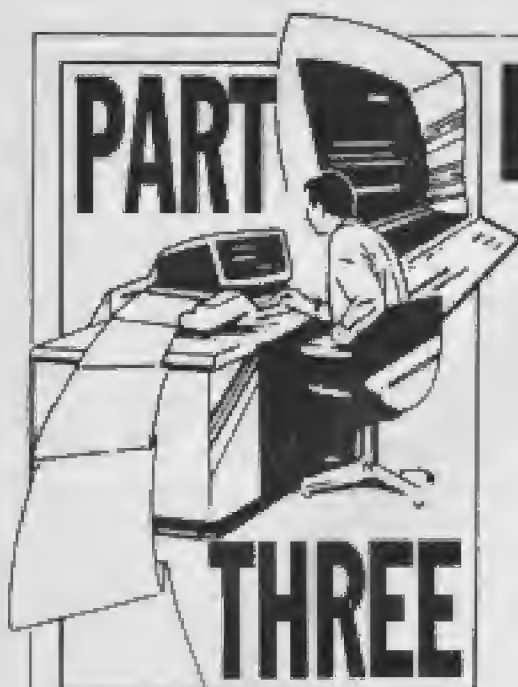
```
0,350:MOVE750,350:MOVE650,350:
PLOT85,600,200:PLOT85,600,200:
ENDPROC
7 GCOLOR,0:MOVE500,400:DRAW
  500,350:DRAW700,350:DRAW700,40
  0:DRAW500,400:GCOLOR,2
8 MOVE500,350:MOVE600,350:
PLOT85,550,400:MOVE600,350:MOV
  E700,350:PLOT85,650,400:GOTO10
9 DEF PROCC(X,Y,R):LOCALI,
  J:FORI=Y+R TO Y-R STEP-4:J=50R
  (ABS(R+R-((I-Y)*(I-Y)))):MOVEX=J
  ,1:DRAWX+J,1:NEXT:MOVEX,Y:ENDP
  ROC
10 COLOUR2:PRINTTAB(13,5):"
  THERES A ...":PRINTTAB(10,27):
  "IN THIS PROGRAM":END
```

THERES A ...



IN THIS PROGRAM!





# CASTING A SPELL - CHECK

**ROLAND WADDILOVE** continues his series exploring the serious side of programming

IN this series we're taking a brief look at some of the more serious software packages available for the Electron.

The first two articles were devoted to word processing using Acornsoft's View and we looked at entering and editing text, formatting and page layout.

Now in this last section of the series on View you'll find a powerful spelling checker, which can be used to proof-read your letters,

notes and documents.

Any errors are highlighted and you have the opportunity to correct any mistakes.

It transfers all the hard work from you to the micro and is the type of boring, repetitive task that computers do best.

Unfortunately, only disc drive owners can use this utility as it simultaneously reads in the text, checks the spelling and writes it out.

Tape owners are limited

to either reading or writing a file, and can't do both at the same time.

Although this utility was written with View files in mind, it will work with many different word processors. For instance, it will quite happily spell check a Mini Office II or Wordwise file on a BBC Micro.

Take a look at the listing. Short isn't it? There aren't any words in the program and it hasn't got a dictionary. In fact you and your

Electron will have to create one. However, it's a lot easier than you might think.

First enter and save the spelling checker. Please note that the program is a Basic listing and runs in Basic, so don't try to load it into View.

Now you need a disc with a View document on that you know is correct - there must not be any spelling mistakes, slips or errors.

Run the spelling checker and reply No when asked if

```

10 REM View Spell Check
20 REM By R.A.Waddilove
30 REM (c) Electron User
40 ON ERROR PRINT:CLOSE#0:
REPORT:PRINT"at line ";ERR:END
50 MODE6:HIMEM=TOP+400:*FX
16
60 PROCassemble:CLEAR
70 PROCinitialise
80 PROCopen
90 REPEAT
100 PROCget-word
110 IF w$<>" PROCsearch:PRO
Cwrite
120 UNTIL done
130 PROCclose
140 END
150
160 DEF PROCinitialise
170 valid$="abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ"
180 COLOURB:COLOUR129:PRINTT
AB0(,13)SPC12"View Spell Check
"SPC12:COLOUR1:COLOUR128:VDU28
,0,24,39,14
190 $HIMEM="":AX=0
200 PRINT "Load dictionary(Y
/N)?";
210 IF (GET OR 32)<>ASC"Y" E
NDPROC
220 INPUT"Name",name$
230 OSCLI"LOAD "+name$+" "+$
TR$HIMEM
240 ENDPROC
250
260 DEF PROCopen
270 INPUT"File to check",na
me$
280 chan1=OPENIN name$
290 chan2=OPENOUT"Text"
300 done=FALSE:CLS
310 ENDPROC
320
330 DEF PROCget-word
340 w$=""
350 CX=0GET#chan1:IF EOF#cha
n1 done=TRUE:ENDPROC
360 IF INSTR(valid$,CHR$(CX))
ELSE BPUT#chan2,CX:GOTO 350
370 w$=w$+CHR$(CX)
380 CX=0GET#chan1:IF EOF#cha
n1 done=TRUE:ENDPROC
390 IF INSTR(valid$,CHR$(CX))
GOTO 370
400 ENDPROC
410
420 DEF PROCclose
430 CLOSE#0
440 PRINT"File checked, pl
ease wait..."
450 PX=HIMEM-1
460 REPEAT PX=PX+1:UNTIL 3PX
=ASC"*":*FX21
470 INPUT"Dictionary name",n
ame$
480 OSCLI"SAVE "+name$+" "+$
TR$(HIMEM)+" "+STR$(PX+5)
490 ENDPROC
500
510 DEF PROCsearch
520 word$=w$
530 IF RIGHT$(w$,3)="ing" w$
=LEFT$(w$,LENw$-3) ELSE IF RIG
HT$(w$,2)="er" w$=LEFT$(w$,LEN
w$-2) ELSE IF RIGHT$(w$,2)="s
" w$=LEFT$(w$,LENw$-2) ELSE IF
RIGHT$(w$,1)="s" w$=LEFT$(w$,
LENw$-1)
540 IF LENw$=0 ENDPROC
550 $B00=w$:CALL EC00:IF AX
=0 ENDPROC
560 CLS:PRINT"(I)gnore (R)
eplace (A)dd:COLOUR129:COLOU
R0:PRINT"word$:COLOUR128:COLOU
R1:KX=GET OR 32
570 IF KX=ASC"i" CLS:ENDPROC
580 IF KX=ASC"r" INPUT"Repl
ace with",word$:CLS:ENDPROC
590 IF PX>47030 PRINT"dictio
nary full!":ENDPROC
600 SP0=$B00+CHR$(13)+*
610 CLS
620 ENDPROC
630
640 DEF PROCwrite
650 FOR IX=1 TO LEN word$:BP
UT#chan2,ASC(MID$(word$,IX,1))
:NEXT
660 BPUT#chan2,CX
670 VDU46
680 ENDPROC
690
700 DEF PROCassemble
710 dict=470:word=$B00:pX=44
40
720 FOR IX=0 TO 2 STEP 2
730 PX=$C00
740 LOPT II
750 SEI
760 LDX #0
770 LC
780 LDA word,X:AND #60F:STA
word,X "upper case letters
790 INX
800 CMP #000:BNE LC
810 .start
820 LDA 006:STA dict:LDA 007
:STA dict+1 \HIMEM=start of d
ictionary
830 LDX #0
840 .compare
850 LDX #0
860 LDA (dict),Y:CMP #ASC"*
:BNE no-match \end of dictio
nary?
870 .loop1
880 LDA (dict),Y:CMP word,X:
BNE next-word \letters match?
890 INX:INY
900 CMP #000:BNE loop1 \end
of word?
910 LDA #0 \match found
920 .no-match
930 STA 0404 \set AX
940 LDA dict:STA pX:LDA dict
+1:STA pX+1 \pX points to afte
r last word tested
950 CLINTS
960 .next-word
970 LDX #0
980 LDA #000
990 .loop2
1000 INC dict:BNE here:INC di
ct+1
1010 .here
1020 CMP (dict),Y:BNE loop2 \
find CR
1030 INC dict:BNE compare:INC
dict+1:BNE compare \start nex
t word
1040 J
1050 NEXT
1060 ENDPROC

```

*This listing is included in this month's cassette tape offer. See order form on Page 53.*



you wish to load a dictionary – you haven't created one yet.

Next enter the filename of the document you know is correct and the program will start reading through the text.

As we didn't load a dictionary the checker doesn't know any words and will print the first one it comes to, asking whether it should ignore it, replace it with another word or add it to the dictionary. Press A to add it.

The checker now moves on to the next word. It is unlikely to know this either (unless of course, you've typed the same word twice), and will repeat the prompt. Again, add it to the dictionary.

In fact, since you know that all the words in this file are correct you can simply keep tapping away at the A key, adding all the words to the dictionary.

So as the program reads

through the text it remembers each new word and by the time it has finished it will know a couple of hundred.

When the whole document has been checked you'll be asked to name the dictionary and all the words learnt will be saved.

Your original file remains untouched on the disc. The checker makes a copy called *TEXT* and makes any correc-

tions to it. If you don't need the original version delete it and rename *TEXT*, giving it the old filename.

Run the program again and this time load the dictionary you've just created. Check a new document and add to the dictionary any correct words that the checker doesn't recognise.

Miss-spelt words may be replaced by pressing R, or

ignored by pressing I.

Each time you check a file the dictionary grows and the program becomes more intelligent. The more documents you check the better it becomes.

There is enough room in memory for up to 5,000 words, though of course, it depends on their size and the ram taken up by the disc system.

It is possible to create several dictionaries, and this would be particularly useful for technical reports which may contain specialised terms.

Programmers may like to extend the routine by making it load and search these special dictionaries if a word is not found.

Now with the aid of this valuable utility there's no excuse for spelling errors.

● Next month we'll move on to something completely different – the programming language *Lisp*.

**VARIABLES**

valid\$	The alphabet.
done	A flag.
w\$	The word to be checked.
p%	The end of the dictionary.

**PROCEDURES**

initialise	Load dictionary.
assemble	Assemble the machine code.
open	Open the files.
get_word	Read a word from the file.
close	Close the files.
search	Search the dictionary.

## JOYSTICKS—THE COMPLETE SOLUTION

### DELTA 3B SINGLE—BBC B or ELECTRON PLUS 1

£12.95

A single joystick that in some ways can act as two. The custom made special "low noise" potentiometers are wired so that it will work as a left hand or right hand joystick. It can even run some programs written for two joysticks and has the fire buttons of both.



### DELTA 3S SINGLE—MASTER COMPACT or ELECTRON FIRST BYTE INTERFACE

£12.95

The same light, hand-held, fast, light action of a 3B but fitted with switches for use with a switched joystick interface, such as a First Byte.

### FIRST BYTE INTERFACE £19.95

### SPECIAL OFFER £29.95

Buy a DELTA 3S and a FIRST BYTE INTERFACE together for £29.95

### NEW!!! DELTA 350 SINGLE—MASTER COMPACT or ELECTRON FIRST BYTE INTERFACE

£19.95

Optical Feed Back. The joystick is fitted with 5 coloured lights to show you exactly when a switch has operated, so you need only move the joystick a minimum amount, and can be certain that you have given a true diagonal signal to the computer.



Available from your dealer  
or direct from us



### DELTA 3B TWIN—BBC B or ELECTRON PLUS 1

£19.95

A direct but improved alternative for the original ACORN joysticks, with 2 joysticks wired to one plug. As with all our joysticks they have the fast action sprung to centre return of the steel shafted nylon covered joystick. The light action makes them ideal to hold and the 3 fire buttons allow left or right-handed use.



# Voltmace Limited

Park Drive  
Baldock  
Herts  
SG7 6EW  
Telephone (0462) 894410





TEL: JACQUI  
0625 528885

# 21st. Software

ACCESS HOTLINE  
SAME DAY SERVICE  
(BBC VERSIONS AVAILABLE)

PRESENTS A SELECTION OF HARDWARE, UTILITIES & SOFTWARE FOR THE ELECTRON

**NEW MICRO POWERS**

**POWER PACK**

3 Cassettes  
Croaker, The Mine, Frerzy  
All 3 for just  
**£4.95**

**NEW SHARDS SOFTWARE**

**THE ADVENTURE PACK**  
(21st Software exclusive) 4 Cassettes

1 Pettigrews Diary	£7.95
2 Mystery Java Star	£7.95
3 Woodbury End	£9.95
4 Operations Salras	£7.95
<b>TOTAL</b>	<b>£33.80</b>

Our price for all four Only £14.85

**NEW THIS MONTHS SPECIALS**

ends May 20th

SMASH & GRAB ONLY £4.95  
STAIRWAY TO HELL ONLY £7.95  
FRANKENSTEIN 2000 ONLY £4.95  
QUICK THINKING PLUS ONLY £4.95  
SALAMANDER 737 ONLY £5.95

**NEW ASL**

**SPHERE OF DESTINY**

CASSETTE  
RRP £7.95 OURS £6.75

	OUR PRICE	Playboy							
A & F		S.A.S. Commando	3.95	Spelling (8-12 yrs)	4.25	Whoopsy	5.95	UTILITIES AND	
Cylon Attack	3.90	C.D.S.	3.95	Natural History (10+)	4.25	SOFTWARE INVATION		HARDWARE SECTION	
Chuckle Egg	3.90	Steve Davis Snooker	7.45	English Words (12+)	4.25	3D Bomb Alley	3.95	ADVANCED COMPUTER	
AARDVARK		Birdie Barrage	8.95	First Aid (12+)	4.25	Guernotele	3.95	PRODUCTS	
Frisk	6.90	Colossus Chess IV	8.45	General Science (14+)	4.25	Bitzkeig	3.95	Advanced Disc Toolkit	32.20
Zelaga	6.90	Brian Clough's Fortunes	12.95	Know England (12+)	4.25	Super Pool	3.95	Advanced Electron D.F.B.	22.15
ACORN SOFT		DR SOFT		Know Scotland (12+)	4.25	Vortex	3.95	A. R. Manager	13.65
Elite	11.85	747 Flight Sim.	8.95	Supersport (14+)	4.25	Stairway to Hell	9.95	A. Electron D.F.B. Eze	18.65
Forth	8.95	Phantom Combat	8.45	20th Century History (12+)	4.25	Chipbuster	5.95	Advanced Rom Ad.	13.65
Lisp	8.95	DATABASE		Association Football (14+)	4.25			A.S. Ram	27.90
Boxer	1.25	Mini Office	4.95	L.C.L.		SOFTWARE PROJECTS		Advanced Disc Inv.	26.55
Starship command	2.99	Micro Olympics	4.95	More French (O' Level)	21.50	Project Graphics	5.95	A.P.A.	75.98
Business Games	2.99	Magic Sword	5.45	More Maths (24 Props O' Level)	21.50			A.P.S.	62.50
Desk Diary	2.99	French on the Run	8.95	More English (24 Props O' Level)	21.50	SQUIRREL SOFT		Plus I	47.95
Tree/Knowledge	2.99	DURELL MARTECH		Mega Maths (A' Level)	21.50	Supergolf	8.50	FIRST BYTE	
Snapper	2.99	Mineshaft	5.95	LARSOFT		Trabalgar	7.00	Quickshot Joyrich & VFace	27.95
Paris, Money Manager	2.99	Combat Lynx	7.95	The Rising of Salandra	4.55	Cashcare	10.65	Quickshot II	9.99
Crazy Trader	2.99	Galsburne's Castle	6.95	Wyndwood	3.65	VAT Care	13.65	Joyrich Interface	18.25
Workshop	2.99	ELITE		The Nine Dancers	3.65	Building Soc. Care	8.95	Printer Interface	18.25
View Rom (Cart)	14.95	Commando	8.45	LOGOTRON		Investment Care	12.95	BBC Printer Cable	9.99
Viewsheet Rom (Cart)	14.94	EPIC SOFTWARE		XOR	8.45	T.V. Director	11.85	Printer I/Face & Cable	27.50
Hopper Rom (Cart)	8.95	The Wheel of Fortune	7.45	MAGSEN SOFT		Squirrels Nuts Pack	7.95	A1	
ISO Pascal Rom (Cart)	54.80	Castle Frankenstein	5.95	Treasure Hunt	8.45	ACORN SOFT AND		Super Smooth Power Suply + 2yr	
ACORN/UNKNOWN		The Quest of the Holy Grail	5.95	Block Busters	8.95	SUPERIOR SOFTWARE		guarantee + on/off switch	20.45
Italian	8.95	Kingdom of Klein	5.95	Gold Run	8.95	Smash and Grab	8.95	P.M.B.	
Spanish	8.95	FIREBIRD		Bullseye	7.95	Overdrive	6.50	E2P802	85.00
ADDICTIVE GAMES		Star Driver	2.95	MELBOURNE HOUSE		Rapion	7.95	PROJECT EXPANSION	
Football Manager	7.95	GILSOFT		Way of Exploding Fat	8.95	Death Star	7.95	User Port	27.95
Boffin	7.95	The Gull	15.45	Classic Adventure	5.95	Repton 2	7.95	SLOGGER	
ADVENTURE INT:		GOLEM LTD		Hampstead House	6.95	Chedel	7.95	Rombox +	51.95
Secret Mission	4.95	Education I	8.50	Dodgy Geozem	7.75	Karate Combat	7.45	Rombox	41.95
ALLIGATA		Education II	8.50	MC LOTHLOREN		Thrust	6.75	Starbox II	27.25
Slagga	8.95	Fun with Words	8.50	Redcoats	5.95	Galeforce	8.45	Elkman	13.95
Tarzan Boy	8.95	Fun with Numbers	8.50	Paras	5.95	Ravenkull	8.45	Stamman	18.65
Nighworld	8.95	Jigsaw	6.50	Johnny Reb	5.95	Repton 3	8.45	Stargraph	19.95
ANCO		GREMLIN GRAPHICS		Special Operations	5.95	Acornsoft Hits Vol I	8.45	Starword	31.75
Thai Boxing	4.95	Footballer of the Year	8.45	Waterloo	8.95	Acornsoft Hits Vol II	8.45	Starword Cumana	31.75
ATARISOFT		HEWSON		Battlezone	5.95	Superior Hits Vol III Case	8.45	Printer Rom	18.65
Robotron	4.95	Heathrow A.T.C.	8.95	MICRODEAL		Superior Hits III Plus 3D	12.95	Plus 1 Rom Upgrade	10.95
ATLANTIS SOFTWARE		Southern Belle	6.50	Space Shuttle	5.00	TYNESOFT		16K Slideways Rom	27.95
League Challenge	2.99	ASL SOFTWARE		MICROPOWER		The Big K.O	8.75	Trak	15.95
BLUE RIBBON		Bug Eye II	8.95	Micropower Magic	6.95	Futurshock	8.75	S.E.D.F.S.	22.95
Nightmare Maze	1.99	Frankenstein 2000	5.95	Jet Power Jack	3.95	Jet Set Willie II	8.75	T2P3	22.95
Castle Assault	1.99	Caveman Capers	8.50	Position	3.95	Goal	8.75	T2CU	22.95
Astro Plumber	1.99	Playcastle	6.50	Swag	3.95	Commonwealth Games	6.50	T2P4	22.95
Diamond Mine	1.99	The Last of The Free	6.50	Gauntlet	3.95	US Drag Racing	5.95	Master Ram Board	50.95
Diamond Mine II	1.99	Electron Power Pack	8.65	Cheese	3.95	Jet Set Willy	6.50	Turbo Driver	27.95
Darts	1.99	Thunderstruck	8.75	Killer Gorilla	3.95	Tynesoft Starter Pack I	6.50	Rom Cartridge	11.65
Jory	1.99	Thunderstruck II	8.95	U.X.B.	3.95	Rig Attack	3.95	S.E.D.S.	70.95
Ravage	1.99	IMAGINE		Felto/Evil Weevils	3.95	Writer Games	6.50	YINE MICRO	
Bar Billards	1.99	Yie Ar Kung Fu	7.95	Fella In Factory	3.95	Mousetrap	6.50	Addorm	26.00
Condition Red	1.99	Yie Ar Kung Fu II	7.45	Fella/Fruit Monsters	3.95	Five-A-Side Soccer	3.95	Wymore House	
BEAU JOLLY		Wile	7.45	Stock Car	3.95	Peg Leg	3.95	Antimute + Tape containing	
Computer Hits I	8.45	INCENTIVE		Rubble Trouble	3.95	Bouncing Bombs	3.95	routines	28.95
Computer Hits II	8.45	Confuzion	5.00	Bumble Bee	3.95	Wet Zone	3.95	PLUS 3 DISCS	
Computer Hits III	8.45	Kat Trilogy	8.45	MIRRORSOFT		Stratobomber	3.95	ACORN SOFT'S	
Five Star Games	8.45	Adventure Creator	13.25	Harrier Strike Force	8.45	Caterpillar	3.95	Database	18.65
BUG BYTE		KANSAS CITY		Count with Olive	6.95	Hyperdrive	3.95	BLUE RIBBON	
Twin Kingdom Valley	2.99	Loony Loco	4.95	First Steps	7.95	Super Hangman	3.95	Games Disc I	8.95
Starforce 7	2.99	Ring of Time	4.50	Hera/Thera with Mr Men	6.95	3D Maze	3.95	G.D.S.	
Tennis	2.99	Moon Buggy	4.95	Quick Thinking Plus	5.95	U.K. P.M.	3.95	Steve Davis	8.95
Roboto	2.99	KOSMOS SOFTWARE		Crackit Towers	8.95	Invader (I.J.K.)	3.95	Birdie Barrage	8.95
Criche	2.95	French Mistress A or B	7.95	PEAKSOFT		Bozo the Brine	3.95	KOSMOS SOFTWARE	
Jack Alac	2.95	German Master A or B	7.95	The Boss	6.95	Cylon Attack	3.95	French A+B	18.65
Savage Pond	2.95	Spanish Tutor A or B	7.95	ROBICO SOFTWARE		Trak II	3.95	German A+B	18.65
Skyhawk	2.99	Welsh A or B	7.95	Rick Hanson	8.45	Space Caverns	3.95	Italian A+B	18.65
Ice Hockey	2.99	Italian A or B	7.95	Project Thekua	8.45	U.S. GOLD		Spanish A+B	18.65
Hunk Dory	2.99	Answer Back Jun. or Sen	8.95	Mycom	8.45	Beach Head	6.95	Ans. Back Sen.	11.65
Plan B	2.99	Answer Back Sport	8.95	Enther 7 (5.25) Disc	10.45	Impossible Mission	7.65	Ans. Back Jun.	11.65
Dunjunz	2.99	Identify Europe	8.95	Note the above disc-AP4 IF only		Crystal Castles	8.65	Ans. Back Sport	11.65
BRITANNIA		FACTFILE SERIES		SALAMANDER		Rebel Planet (text adv)	8.95	Any Facile	7.45
Play Your Cards Right	8.95	(Used with Answer Back		737 Flight Sim	8.95	Kyleth	8.95	SUPERIOR SOFTWARE	
CONSOFT		Series)		SHARDS		YES SOFTWARE		Superior Hits II	12.95
Serpents Lair	3.95	Arithmetic (8-11 yrs)	4.25	Operation Salras	8.95	Golf	2.99		
				Woodbury End	8.95				

BOX OF TEN C20 COMPUTER CASSETTES £4.99 in VAT & P&P

ALL PRICES ARE INCLUSIVE OF VAT AND CARRIAGE  
OVERSEAS ORDERS PLEASE ADD £1.00 PER ITEM. INCLUDES INSURANCE

Please send me: ☐ Cass ☐ Plus 3 Disc ☐

1. \_\_\_\_\_ £ \_\_\_\_\_  
2. \_\_\_\_\_ £ \_\_\_\_\_  
3. \_\_\_\_\_ £ \_\_\_\_\_  
4. \_\_\_\_\_ £ \_\_\_\_\_  
TOTAL £ \_\_\_\_\_

Please make cheques payable to:  
21st Software Ltd

Access No  
[ ] [ ]

Send Orders to:  
21st SOFTWARE LTD. Dept EU  
15 Bridgefield Avenue,  
Wilmslow SK9 2JS  
Tel: Wilmslow (0625) 528885

Name \_\_\_\_\_

Address \_\_\_\_\_

Post Code \_\_\_\_\_

Tel. No \_\_\_\_\_



EXCELLENT though the Plus 1 is, I think there is still room for improvement, and this is shown by the superb add-ons that have been released in recent months.

When Acorn designed it they decided to include an analogue to digital converter.

Although this is almost identical to that built in to the BBC Micro, and may be used for a variety of purposes, probably the most common function is as a simple joystick port.

At the design stage it's difficult to predict exactly what niche a micro will occupy and it was thought that compatibility with the BBC Micro took precedence.

The Electron has turned out to be a superb games micro with some outstanding software.

Hardened arcade addicts demand the best from their equipment, and many prefer the positive feel of a switched joystick to the less precise analogue variety.

A quick action and rapid fire button are essential if wave after wave of marauding aliens are to be wiped out.

Unfortunately, the Plus 1 was rather late on the scene, and many games either do not include a joystick option or are designed to use a different interface.

First Byte was the first company to produce a suitable joystick interface and although it does enable you to use the switched variety with many games, it doesn't allow you to plug in a Plus 1.

So you can't take advantage of the Plus 1's main advantages — the multi-purpose cartridge sockets and Centronics printer port. Of course if this is not important then the interface is well recommended by many games players.

In addition, Slogger's own alternative to the Plus 1 — the Rombox Plus, does not have any form of joystick port at all.

Now they have come to the rescue with a cartridge that plugs into the Plus 1 or Rombox providing a 9 pin D socket for Atari-style switched joysticks.

# Interface for arcade addicts

**ROLAND WADDILOVE reviews Slogger's latest offering**



The cartridge is the same size and shape as a View or Viewsheet cartridge and has the socket set into the top.

The operating system rom in the Plus 1 or Rombox must be replaced with a new chip provided by Slogger.

The Plus 1's is easily replaced but, the Rombox can't be opened and you must insert it through the cartridge slots. This is not easy and requires an L-shaped screwdriver.

The new operating system works in a similar fashion to the old rom but, in addition, provides three new functions: The micro always powers up in Basic (normally it is only entered as a last resort), an extended

printer buffer can be set up in sideways ram and the new joystick port is set up.

Unlike the Plus 1's ADC port, the Slogger version is programmable. The joystick's up, down, left, right and fire functions can be made to emulate any key on the keyboard. The joystick pretends to be five keys, for instance, A Z ? \* for up, down, left and right with Return for fire — a common key combination.

The advantage of this system is that it can be used with software that does not have a joystick option.

It will work with all the games published in *Electron User* and a fair proportion of commercial software too.

Providing the program reads the keyboard in the Acorn approved manner,

using INKEY or osbyte &B1, you can use the joystick. Unfortunately though, not all games do.

For instance, Superior Software's *Deathstar* and Bug Byte's *Plan B* work perfectly using a joystick, yet Synchron ignored it and Audiogenic's *Last of the Free* wouldn't even load.

To sum up, the joystick interface does not work with all software, I didn't expect it to.

However, it does work with enough to make it well worth saving up for. Bearing in mind these reservations, I can recommend it to all arcade addicts.

**Product:** Switched joystick interface  
**Price:** £19.95  
**Supplier:** Slogger, 107 Richmond Road, Gillingham, Kent ME7 1LX.  
**Tel:** 0634 52303



# Devise your own Repton screens ... and baffle your friends!



First there was Repton, voted Game of the Year in 1985. Then came the universally acclaimed Repton 2 with a whole set of new challenges. Now comes Repton 3 – all the fun of the first two games but with even more appeal!

Not only are there 24 screens with a host of brand new challenges, there is also a feature-packed screen designer.

Now you can devise your own fiendish screens for your family and friends to solve. Position timebombs, sprinkle the growing fungus, and set devious puzzles of rocks and diamonds. Then you can save your masterpiece to cassette or disc.

It's certainly a game which will keep you entertained for months!

You can buy Repton 3 from us and **SAVE £2** on the normal selling price.

Or you can take out a subscription and **SAVE a massive £5**.



Design a screen then playtest it



You can even change the characters

SAVE UP TO **£5**

	RRP	Special reader offer	YOU SAVE	Offer including subscription	YOU SAVE
Cassette	£9.95	£7.95	£2	£16.95	£5

TO ORDER PLEASE USE THE FORM ON PAGE 53



# Meet Mandelbrot

FRACTALS, recursion and the Mandelbrot set are three related topics which have been cropping up recently on various micros.

They all have their roots firmly embedded in mathematics, and are often used by computer programmers as the basis for generating impressive graphic displays.

What makes them so fascinating is the way in which a simple mathematical formula or algorithm can give rise to a beautiful pattern or picture.

The programming techniques involved are generally quite straightforward and seldom require large amounts of code.

This results in short, neat and structured listings. So the programs, like the maths, are also short and simple.

Fractals are strange beasts, sometimes called monstrous curves. They can be described as lines of infinite length bounding a finite area - a seemingly impossible situation.

Examination of fractals has revealed strange and puzzling behaviour - the closer you look the more detail you see. This unusual nature can be shown by drawing a fractal (really just an approximation), on screen and magnifying it by zooming in on a small section. The more you magnify it, the more fragmented and irregular it becomes.

This behaviour has been used to great effect in several arcade games to create impressive scenery and background landscapes. In one game involving a flying sequence the hills and mountains are simply fractals. The closer you fly toward them the more detail you see.

This clever technique of creating landscapes from simple mathematical formulae saves vast amounts of precious ram, which would otherwise be filled with compressed screen data.

The Mandelbrot set, the subject of the accompanying program listing, is named after Benoit Mandelbrot, who has studied the

## Explore the weird and wonderful world of fractal graphics with ROLAND WADDILOVE

behaviour of one particular class of fractals.

To find whether the point  $a, b$  lies within the set, the following function is applied repeatedly to itself an infinite number of times:

$$\begin{aligned}x &= 0 \\y &= 0 \\x &= x^2 - y^2 + a \\y &= 2xy + b\end{aligned}$$

Monitoring  $x$  and  $y$  reveals that one of two things are likely to happen. Either the function will rapidly grow, eventually ending up infinitely large, or it will remain stable and small.

It can be shown (see *The Fractal Geometry of Nature* by Benoit Mandelbrot), that all the points within the set are such that:

$$x^2 + y^2 < 4$$

Obviously we can't repeat the process an infinite number of times, life is just too short, so we restrict ourselves to some arbitrary number, say 50. However, the limit condition may be exceeded long before 50 iterations have been completed.

To obtain the impressive screen display shown in Figure 1 what we do is look at the points that lie within and just outside the Mandelbrot set.

The black area represents those points that lie within the set and the colours are generated by measuring how quickly the points outside the set shoot off toward infinity.

The main difficulty experienced by programmers when coding fractal generators is that of achieving a reasonable speed.

The screen in Mode 5 on the Electron is 160 pixels wide by 256 deep. Of course, not all the points lie within the set, but those that do will require the full 50

iterations of the function, which means around 20,000 pixels.

As you can imagine, this could take literally all day to calculate on a small, relatively slow micro like the Electron.

The version presented here is written entirely in machine code for speed, and will generate a full screen display in around two hours.

Enter and run Mandelbrot Set to create the screen shown in Figure 1. If you would like to zoom in on a section you will have to alter the two FOR...NEXT loops in lines 130 and 140, plus  $multx$  and  $multy$  in 110.

In general terms the lines are:

```
130 FOR i=a TO b STEP (b-a)/
160
140 FOR j=c TO d STEP (d-c)/
256

110 A%=0:multx=1280/(a-b):mu
lty=1024/(d-c)
```

The values  $a, b, c$  and  $d$  should be 2 or less, otherwise the function limit will be exceeded straight away.

Also there's not much point in looking at the black

area in the centre of the set, the edges are most interesting.

Remember, the nature of fractals means that you can create an infinite number of different screen displays by zooming in and magnifying sections of the set, so get cracking and explore this fascinating world. ■

```
10 REM Mandelbrot Set
20 REM By R.A.Waddilove
30 REM (c) Electron User
40 MODE 5: *FX16
50 VDU19,3,5,0;
60 VDU23,1,0,0,0,0;
70 PROCassemble
80 VDU29,2*1280/2.7,512;
90 VDU23,224,85,178,85,178,
85,178,85,178
100 FOR ix=1 TO 31:PRINT TAB
(8,ix)STRING$(20,CHR$(224));:NEX
T:PRINT CHR$(30);CHR$(11);STRING$(
20,CHR$(224));
110 A%=0:multx=1280/2.7:mult
y=1024/2.8
120 CALL set_up,multx,multy:
CLEAR
130 FOR i=-2.0 TO 0.7 STEP 2
.7/160
140 FOR j=-1.4 TO 1.4 STEP 2
.8/256
150 CALL8900,i,j
160 NEXT
170 NEXT
180 GCOL0,2:MOVE0,0:DRAW0,10
23:DRAW1278,1023:DRAW1278,0:DR
AW0,0
190 *FX178,255
200 VDU7,7:*FX21
210 *SAVE SCREEN 5800 8800
220 END
```



Figure 1: The Mandelbrot set



# Learning CAN be fun

- Use your Electron to teach and amuse your children at the same time.
- Three packages crammed full of educational programs - and so easy to use!
- Each program has been educationally approved after extensive testing in the classroom.

ONLY  
£4.95 tape  
£5.95  
3½" disc



## Ages 2-5

Alphabet  
Colours  
Counting  
House  
Magic Garden  
Matchmaker  
Numbers  
Pelican  
Seaside  
Snap



**PELICAN**  
*Teach your children to cross the road safely at a Pelican crossing*



**HOUSE**  
*Select the colours to draw a house - hours of creative entertainment*

## Ages 5-8

Balance  
Castle  
Derrick  
Fred's Words  
Hilo  
Maths Test  
Mouser  
Number Signs  
Seawall  
Super Spell



**NUMBER SIGNS**  
*Provide the correct arithmetic sign and aim to score ten out of ten*



**BALANCE**  
*Learn maths the fun way. Type in the answer to balance the scales*

## Ages 8-12

Anagram  
Codebreaker  
Dog Duck Corn  
Guessing  
Hangman  
Maths Hike  
Nim  
Odd Man Out  
Pelmanism  
Towers of Hanoi



**HANGMAN**  
*Improve your child's spelling with this fun version of the popular game*



**ODD MAN OUT**  
*Find the word that does not fit - before your time runs out*

**TO ORDER TURN TO THE FORM ON PAGE 53**



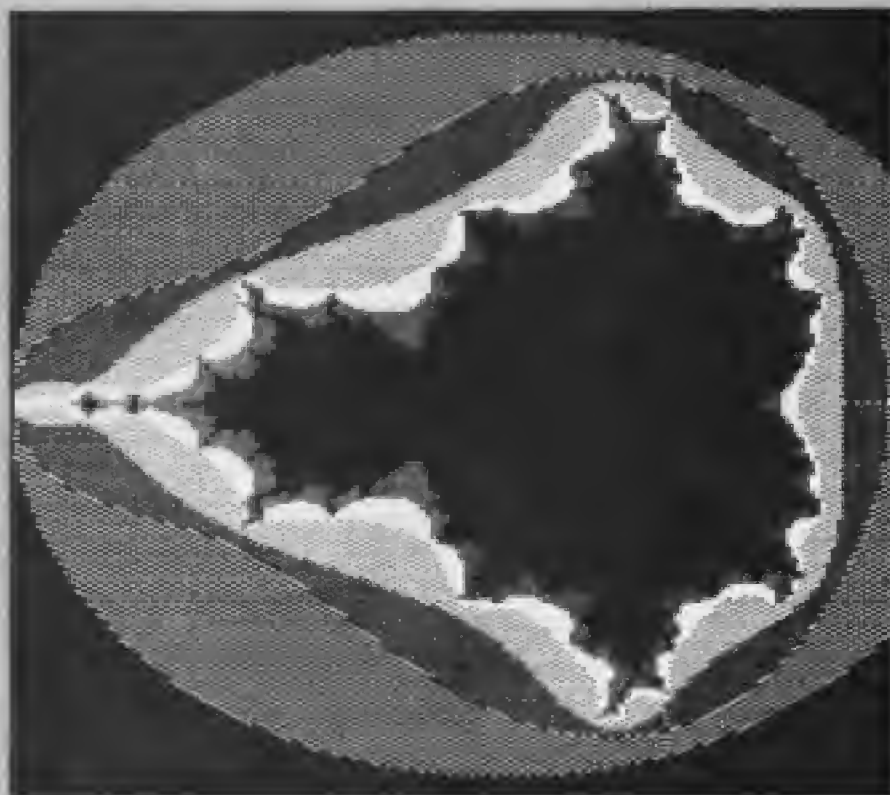
# Mandelbrot listing

## From Page 41

```

230
240 DEF PROCassemble
250 AX=&404:BX=&408:CX=&40C
260 gcol=&359:plot_mode=&35B
270 osurch=&1820E AND &FFFF
280 IntA=&2A
290 FPA=&E2E:FPB=&B3B
300 normalise_FPA=&A3B3
310 zero_FPA=&A686
320 var_to_FPA=&43B5
330 FPA_times_FPB=&A613
340 FPA_plus_FPB=&A58B
350 real_to_integer=&A3E4
360 integer_to_real=&A2BE
370 negate_FPA=&A07E
380 fpx=&78:fpj=&78
390 fpi=&88:fpj=&88
400 x2=&890:y2=&898
410 multx=&680:multy=&68
420 n=&65B
430 FOR pass=0 TO 2 STEP 2
440 PZ=&898
450 DPT pass
460 LDA &601:STA &4B:LDA &60
2:STA &4C:JSR var_to_FPA \unp
ack i into FPA
470 LDX #7
480 .loop
490 LDA FPA,X:STA fpi,X \st
ore i
500 DEX:BPL loop
510 LDA &604:STA &4B:LDA &60
5:STA &4C:JSR var_to_FPA \unp
ack j into FPA
520 LDX #7
530 .loop
540 LDA FPA,X:STA fpj,X \st
ore j
550 DEX:BPL loop
560 JSR zero_FPA
570 LDX #7
580 .loop
590 LDA FPA,X:STA fpx,X:STA
fpy,X \store x and y
600 DEX:BPL loop
610 LDA #0:STA n \zero n
620
630 .repeat \start loop
640 LDX #7
650 .loop
660 LDA fpx,X:STA FPA,X:STA
FPB,X \store x in FPA/FPB
670 DEX:BPL loop
680 JSR normalise_FPA:BEQ ze
ro1
690 JSR FPA_times_FPB \FPA=
FPA*FPB (x*x)
700 JSR normalise_FPA
710 .zerol
720 LDX #7
730 .loop
740 LDA FPA,X:STA x2,X \x2=
x*x
750 DEX:BPL loop
760 LDX #7
770 .loop
780 LDA fpy,X:STA FPA,X:STA
FPB,X \store y in FPA/FPB
790 DEX:BPL loop
800 JSR normalise_FPA:BEQ ze
ro2
810 JSR FPA_times_FPB \FPA=
FPA*FPB (y*y)
820 JSR normalise_FPA
830 .zero2

```



```

840 LDX #7
850 .loop
860 LDA FPA,X:STA y2,X \y2=
y*y
870 DEX:BPL loop
880 LDX #7
890 .loop
900 LDA fpy,X:STA FPA,X \FP
A=y
910 LDA fpx,X:STA FPB,X \FP
B=x
920 DEX:BPL loop
930 JSR normalise_FPA:BEQ ze
ro3
940 JSR FPA_times_FPB \FPA=
FPA*FPB
950 .zero3
960 LDX #7

```

This is one of hundreds of  
programs now available  
FREE for downloading on

**MicroLink**

```

970 .loop
980 LDA FPA,X:STA FPB,X \co
py FPA to FPB
990 DEX:BPL loop
1000 JSR FPA_plus_FPB \FPA=F
PA+FPB (2*x*y)
1010 LDX #7
1020 .loop
1030 LDA fpj,X:STA FPB,X \FP
B=j
1040 DEX:BPL loop
1050 JSR FPA_plus_FPB \FPA=F
PA+FPB (2*x*y+j)
1060 LDX #7
1070 .loop
1080 LDA FPA,X:STA fpy,X \st
ore new value of y
1090 DEX:BPL loop
1100 LDX #7
1110 .loop
1120 LDA x2,X:STA FPB,X \FPB
=x2
1130 LDA y2,X:STA FPA,X \FPA
=y2
1140 DEX:BPL loop

```

```

1150 JSR negate_FPA \y2=-y2
1160 JSR FPA_plus_FPB \FPA=F
PA+FPB (x2-y2)
1170 LDX #7
1180 .loop
1190 LDA fpi,X:STA FPB,X \FP
B=i
1200 DEX:BPL loop
1210 JSR FPA_plus_FPB \FPA=F
PA+FPB (x2-y2+i)
1220 JSR normalise_FPA
1230 LDX #7
1240 .loop
1250 LDA FPA,X:STA fpx,X \st
ore new value of x
1260 DEX:BPL loop
1270 LDX #7
1280 .loop
1290 LDA x2,X:STA FPB,X \FPB
=x2
1300 LDA y2,X:STA FPA,X \FPA
=y2
1310 DEX:BPL loop
1320 JSR FPA_plus_FPB \FPA=F
PA+FPB (x2+y2)
1330 JSR normalise_FPA
1340 JSR real_to_integer \In
tA=INT(FPA)
1350 LDA IntA:CMP #4:BCC done
1360 INC n:LDA n:CMP #58:BEQ
done
1370 JMP repeat
1380 .done
1390 LDA n \set colour
1400 CMP #3:BCC colour7
1410 LDY #2:LDX #80F:BNE set_
gcol \GCOL 2,1...red/black
1420 .colour7
1430 CMP #3:BCC colour6
1440 LDY #2:LDX #8F0:BNE set_
gcol \GCOL 2,2...yellow/black
1450 .colour6
1460 CMP #4:BCC colour5
1470 LDY #3:LDX #8FF:BNE set_
gcol \GCOL 3,3...white/black
1480 .colour5
1490 CMP #5:BCC colour4
1500 LDY #3:LDX #80F:BNE set_
gcol \GCOL 3,1...yellow/red
1510 .colour4
1520 CMP #7:BCC colour3
1530 LDY #1:LDX #8F0:BNE set_

```

```

gcol \GCOL 1,2...white/yellow
1540 .colour3
1550 CMP #9:BCC colour2
1560 LDY #0:LDX #8FF:BNE set_
gcol \GCOL 0,3...white
1570 .colour2
1580 CMP #15:BCC colour1
1590 LDY #0:LDX #8F0:BNE set_
gcol \GCOL 0,2...yellow
1600 .colour1
1610 CMP #58:BCC colour0
1620 LDY #0:LDX #80F:BNE set_
gcol \GCOL 0,1...red
1630 .colour0
1640 LDY #0:LDX #800 \GCOL 0
,0...black
1650 .set_gcol
1660 STY plot_mode:STX gcol
1670 LDA #25:JSR osurch:LDA #
69:JSR osurch \PLOT 69
1680 LDX #7
1690 .loop
1700 LDA fpi,X:STA FPA,X \FP
A=i
1710 LDA multx,X:STA FPB,X \
FPB=x multiplier
1720 DEX:BPL loop
1730 JSR FPA_times_FPB \FPA=
FPA*FPB (multx*i)
1740 JSR normalise_FPA
1750 JSR real_to_integer \In
tA=FPA
1760 LDA IntA:JSR osurch:LDA
IntA+1:JSR osurch
1770 LDX #7
1780 .loop
1790 LDA fpj,X:STA FPA,X \FP
A=j
1800 LDA multy,X:STA FPB,X \
FPB=y multiplier
1810 DEX:BPL loop
1820 JSR FPA_times_FPB \FPA=
FPA*FPB (multy*j)
1830 JSR normalise_FPA
1840 JSR real_to_integer \In
tA=FPA
1850 LDA IntA:JSR osurch:LDA
IntA+1:JSR osurch
1860 RTS
1870
1880 .set_up \unpack i,j mul
tipliers
1890 LDA &601:STA &4B:LDA &60
2:STA &4C:JSR var_to_FPA \unp
ack multx into FPA
1900 LDX #7
1910 .loop
1920 LDA FPA,X:STA multx,X
1930 DEX:BPL loop
1940 LDA &604:STA &4B:LDA &60
5:STA &4C:JSR var_to_FPA \unp
ack multy into FPA
1950 LDX #7
1960 .loop
1970 LDA FPA,X:STA multy,X
1980 DEX:BPL loop
1990 RTS
2000 J
2010 NEXT
2020 ENDPROC

```

This listing is included in  
this month's cassette  
tape offer. See order  
form on Page 53.



# BACK TO BASICS

Part nine of TREVOR ROBERTS' down-to-earth series

## The ins and outs of INPUT

IF you cast your mind back to what we did last month, Program I should cause you no problem.

```
10 REM Program I
20 INPUT "What's your name? " name$
30 INPUT "What's your age? " age
40 PRINT name$ " is "age" years old."
```

The first line is just a REM, giving the program a title so we can refer to it. The next two lines use the keyword INPUT, the Basic command we met last time.

This does two things. First it prints out the message in inverted commas, telling you that the program wants you to do something. Notice that the inverted commas aren't displayed, they're just there to mark the beginning and end of the message.

It then takes whatever you type in at the keyboard and puts it into the variable at the end of the INPUT statement.

Hence line 20 looks at the keyboard and puts whatever you enter into name\$. Line 30 again looks at the keyboard and places what it finds there in age. Line 40 just prints out your name and age.

One thing to bear in mind is the type of variable associated with an INPUT. In Program I, name\$ is obviously a string variable and so anything you type in will be taken as a string. In line 30 age is a numeric variable.

What happens if you inadvertently give name\$ a number and age a string? The answer is to try it and see.

Suppose I'd meant to answer the prompts with Trevor and then 36 but made a mistake and put in my age first and then my name. The result is that the program displays:

```
36 is 0 years old
```

What's happened is that the Electron has taken the 36 and put it into the string variable name\$ with no problems.

Now you and I know that 36 isn't a proper name but the Electron doesn't and will accept it quite happily. The 36 is treated as a string, which means that you can't do maths with it.

However, when it comes to putting Trevor into age it has problems. While it can accept 36 as a string, it can't figure out how to treat Trevor as a number. So what it does is ignore it and place a 0 into age. Hence the statement that:

```
36 is 0 years old
```

## Good sense in going a little loopy \*\*\*

### It's all the same

WHILE Program I isn't very useful it does show the way INPUT works. And you can imagine how once the program has got the details of age and name it could go on to use them instead of just displaying them.

However, rather than just take one name, any useful program would take a lot of them, doing the same things over and over. But how do we do it? Take a look at Program II:

```
10 REM Program II
20 PRINT "*";
30 PRINT "*";
40 PRINT "*";
50 PRINT
```

It's not hard to see that it will produce a line of three asterisks:

```
***
```

If you can't get it to do that, you've probably left off the semicolons at the ends of lines 20 to 40.

The final PRINT is just there to move the cursor to a new line. Leave it out and see what happens.

Now while printing a line of asterisks is hardly what we buy a computer for, it does illustrate some problems that can occur when we try to do things over and over.

Suppose we wanted to print a line of 30 asterisks one at a time (don't ask me why). You'd need 30 PRINT statements to do it. A lot of program for very little output.

If you look at Program II you'll see that lines 20, 30 and 40 are identical. Wouldn't it be nice if we could just tell the Electron to print \* three times, rather than have to use the same thing in three different lines? And this can be done. After all, what else is Basic FOR?



## Over and over again

WITHOUT more ado, try running Program III:

```
10 REM Program III
20 FOR loop=1 TO 3
30 PRINT "*";
40 NEXT loop
50 PRINT
```

You'll find that you get our three asterisks again. How has this happened? There's only one PRINT in the program, at line 30. Yet somehow it's produced three asterisks. Why?

The answer lies in the lines on either side of the PRINT statement. These tell the Electron to perform whatever comes between them three times.

What happens is that the Electron comes to line 20 and finds a FOR. Being a clever beast, it knows that somewhere, later in the program, there's going to be a NEXT that matches up with

this FOR. It also knows that whatever comes between them is to be repeated a certain number of times.

These two keywords, FOR and NEXT, work in tandem to mark off the lines that are going to be done more than once and form what is known as a loop.

While these may mark off the bit of program that's to be repeated, they don't tell the Electron how many times. This is left to the TO which is always found on the same line as the FOR.

It makes use of a loop control variable, in this case named loop. This is given a range of values it can take, in this case from 1 to 3, going up in ones. Hence loop is 1, then 2, then 3. And for each successive value of loop the lines between the FOR and the NEXT are performed. Hence our three asterisks.

## Making it formal

FOR, TO and NEXT combine to make the most complicated BASIC structure we've met so far. They make the pattern:

```
FOR variable=start TO finish
body of loop
NEXT variable
```

Here variable is any numeric variable and is known as the loop control variable because it controls the number of times the loop cycles.

In Program III we used the name loop. We could have used fred or x but loop is better as it is meaningful. And meaningful variable names make our programs a lot easier to read.

The variable start stands for a whole number, as does finish. As the loop progresses, so variable will increase in value by 1 for each cycle and each time the line or lines between the FOR and the NEXT are performed.

The NEXT (followed by variable as a label) marks the end of the code that is to be repeated.

## Yet one more time

PROGRAM IV shows another loop in action.

```
10 REM Program IV
20 FOR loop=1 TO 5
30 PRINT "Loop number ";loop
40 NEXT loop
```

Line 20 holds the FOR that starts things off. From this we can see that loop is to vary from 1 to 5. As this happens, the body of the loop is repeated five times.

In this case the body of the loop consists of just one line. This prints out the current value of loop, effectively labelling each cycle of the loop.

When the Electron first executes line 20, loop has the value 1. Line 30 then prints out:

Loop number 1

and the program reaches line 30. It's here that the NEXT sends the Electron back to the line with the FOR. But first it increases the value of loop by 1, making it 2.

At this point the Electron checks to see if loop is within the values specified by the TO. In this case it is, so the program carries on. The next time it reaches the NEXT loop is incremented to 3, the range is checked and on it goes.

Eventually loop is increased to 6. Now this is obviously out of the specified range, 1 TO 5. The program now ignores the body of the loop and carries on from the first line after the NEXT. In this case there isn't one and the program ends. Try running it again after adding:

```
50 PRINT "At the end loop is ";loop
```

This should prove that loop is increased until it's out of range.





# COULD THIS BE YOUR PROGRAM?



Is your program good enough to fill this spot?

Will your game be the next No. 1 hit?

Are you looking for **top** royalties?

Are you writing for leading computers such as Commodore 64/128, C16/Plus-4, BBC/Electron, Atari, Amstrad, MSX, Spectrum or any other 6502/Z80 Micro.

Answer YES to any of these questions and we would like to hear from you. Send your program tape or disc, together with full instructions for fast evaluation. Be sure to state your computer type, memory, peripherals used and your name, address and telephone number.

34 BOURTON ROAD GLOUCESTER GL4 0LE  
Tel (0452) 412572

P.S. Urgently required games software for Electron and BBC



# Micro Messages

## The shape of things to come

I WAS pleased to read the comment in the March 1987 issue of Electron User regarding the accent on games. I have every issue of the magazine but was about to let my subscription run out.

However, I have noted and welcome the new Hardware Projects and View word processing series.

May I suggest that you continue in this direction by following up with series with the Viewsheet spreadsheet and Viewstore database?

Also could you include (for us less experienced), articles which would convert Acornsoft home and educational programs from cassette to Plus 3 disc?

Titles such as Personal Money Management, Desk Diary, Graphs and Charts, Watch Your Weight and Business Games I find excellent, but slow to load.

I am sure that you could now get the approval from Acornsoft to help develop their software in order to have the sort of workstations that were envisaged for the Electron.

In hope of good things to come I have just renewed

my subscription. How about it? — G. Stevenson-Galvin, Ashbourne, Meath, Eire.

● In the next section of the Serious Software series we will be discussing the language Lisp and this will be followed by a look at Viewsheet.

Transferring software from tape to disc is illegal and we would soon be in hot water if we published a utility that did this for you.

### Cutting REMarks

REGARDING Trevor Robert's remarks on the REM statement in the March 1987 issue of Electron User, he omitted to point out that although a computer ignores a REM, it does consume space in memory.

While it is vital to include REMs when programming

(to show others how your mind was working), it is equally vital to remove them from the working program. Otherwise you will be left wondering why a comparatively simple program won't work (out of memory), as I was recently.

It did work excellently — when we had removed almost 1700 REMs thoughtfully left in by the trainee programmer. And that was on a 1Mb micro: It is even more important on computers with tiny memories like the Electron.

Also, REMs can appreciably slow a program down. Hence it is not true to say "they do not affect the program". — R.H. Hill, Woodford Green, Essex

● You are right, REMs do affect programs to a small extent. Too many will make a listing unnecessarily long, perhaps even to the point of crashing the micro or sig-

nificantly slowing it down. Too few will make the program unreadable.

It's a simple matter of common sense when deciding where, when and how many to use.

### Disabling the Plus 1

ON my last holiday in the UK I bought Slogger's Master Ram Board and I must say that I am very pleased with it. The increase in memory, especially in 80 column mode using View and Viewsheet, and the Turbo speed make the Electron quite powerful.

I found one bug though, to disable the Plus 1 the program you published:

```
*FX 163,128,1
?B212=B06
?B213=B01
?B2AC=0
```

still works in normal mode. In Turbo or 64k mode when the Slogger OS 2.00 is active you have to change these values. The following routine should be used:

```
*FX 163,128,1
?B212=B55
?B213=B02
?B2AC=0
```

— J.M. van der Heijden, Haarlem, The Netherlands.

### Printer commands

I RECENTLY bought a printer made by C. Itoh Electronics Inc. I have been faced with a problem though: When attempting to list programs all the text is printed on one

## Creating a BOOT! file

AFTER reading the article on the Rombox Plus in the November 1986 issue of Electron User, I decided to buy it along with the AP4, even though the article did say that problems may occur with this combination.

On receiving the package I hurriedly attached it to the micro, following the instructions in the booklets supplied.

After switching on and typing in \*HELP the Electron told me that the AP4 was not on. I sat for hours trying to fathom out what was wrong but, with no luck.

While packing the Rombox away to send it back to Slogger the little plastic seating on which the

AP4 sat fell out. Wondering if this could help I unpacked everything and set it up again. Hey presto! It worked.

On closer inspection with the other rom cartridge slot, the AP4 was not inserted properly because this plastic seating was too high. Since then everything has worked perfectly.

On swapping discs with a friend who owns a BBC Micro I found a !BOOT program. However, it would not work on the Electron.

Please could you or any of the readers help by writing a !BOOT program for the Electron with the AP4.

I have been reading your magazine for a year now

and think it is great. Keep up the good work. — Allan Inness, Stockton, Cleveland.

● Most !BOOT files simply CHAIN another program on the disc, such as a menu.

The !BOOT program on your friend's BBC disc probably worked but it is quite likely that the program it CHAINED only runs on a BBC Micro.

Here's how to create a simple !BOOT file — enter:

```
*BUILD !BOOT
CHAIN "MENU"
<Press Escape>
*OPT4,3
```

Now you can press Shift+Break and the file called MENU will automatically load and run.



## From Page 47

line, resulting in a horrible black mess.

I have bought Mini Office and have found that when responding with an N to the question "Does your printer have automatic line feed?", it works perfectly.

I wonder if you could help me by informing me which commands are used to print out listings correctly. — **Mark Goulding** (age 14), Bradford, W. Yorks.

● This is quite a common problem, but fortunately one that is easily cured. Simply enter:

\*FX6

before listing the program. Many printers have a block of DIP switches inside the case enabling you to set up the printer for different micros and typesets. One of them will be to set automatic line feed.

If you switch this on you won't need to enter the FX command before printing. Every printer is different and you'll have to consult your manual to find the exact location and correct switch.

## File transfer

I OWN an Electron with Plus 3, Plus 1 and View. I am currently considering buying a Master Compact.

However, I have many lengthy View files on single sided Plus 3 discs, which I want to keep. Will I be able to load them successfully on the Master Compact? — **A.P. Green**, Hitchin, Herts.

● The Master Compact can read Electron discs and is supplied with View on disc. You shouldn't have any problems at all transferring your files to your new micro.

## Electron Elite

I AM writing to ask a question about Elite because while I was at school I read something in a magazine that puzzled me.

To relieve the boredom at lunch time I was reading a

**WHAT** would you like to see in future issues of Electron User?

What tips have you picked up that could help other readers?

Here is your opportunity to share your experiences.

Remember that these are the pages that you

write yourselves. So tear yourself away from your Electron keyboard and drop us a line.

The address is:

Micro Messages  
Electron User

Europa House  
68 Chester Road  
Hazel Grove  
Stockport SK7 5NY.

magazine for the Spectrum. Knowing that I have a copy of Elite for my Electron, my friend showed me a section of tips on how to play Elite. I came to the conclusion that the Spectrum's version is almost exactly the same as the Electron's.

However, I came across a section that spoke about a number of special missions incorporated in the game.

This took me totally by surprise as I had never heard of such missions before. None of my friends who have BBC Micros, Electrons or Spectrums have either.

Does the Electron version of Elite have these missions? I realise that it does not have any suns that could go nova but, I have received two or three "Right On Commander" messages.

Perhaps someone reading Electron User has heard of or, even been on such a mission in Elite? — **Julian Stiles**, Huntingdon, Cambs.

● The Electron version of Elite does not have missions but the BBC Micro version does.

## Disc protection

AT last I have found a way of protecting my ADFS discs: Using a disc toolkit look at track 0, sector 2 of an unwanted disc with a couple of programs on. Those with ACP's ADT can use \*DEX.

The first byte, the character before the H of Hugo, is interesting as it holds the number of files on the disc. Make a note of this number and replace it with another.

Save the sector and do a hard break — Control+A+Break and \*CAT the disc. The catalogue will not come

up and a "Broken Directory" error message is printed instead.

Now turn the micro off and on. Use the disc sector editor again and place the original number just before the H of Hugo. Save this, \*CAT and the catalogue comes up again.

If you do this with valuable discs keep the original numbers in a safe place. — **Steve Forrester**, Sevenoaks, Kent.

## Printer control

ON February 27, 1987, I purchased a second-hand Amstrad DMP 2000 printer without a manual after reading your review in Electron User, August 1986.

On connecting it to my Electron I encountered a problem. The paper would not feed forward when Return was pressed so everything I typed was printed on one line. In your review you had not mentioned this.

When I tried to use View it did the same. I used the printer driver in the same issue but, the printer still did not work properly.

Eventually I looked in the Mini Office manual. There I found the command \*FX6. I tried this and bingo!, everything worked perfectly.

View now works but with a lack of print styles. I hope this will be of use to any people who are having similar problems with their printers. — **Julian Robinson**, Coventry, West Midlands.

● There is nothing wrong with your printer or Electron, it's just a lack of communication. Either your printer can decide when to

feed the paper, or your micro can.

In your case neither were producing paper feed instructions and the text was printed all on one line.

You can set one of the DIP switches on the back of the printer so that it produces automatic line feeds or alternatively the Electron can be told to produce them using \*FX6.

## Future shock

I MUST congratulate you on your excellent publication, which I have found of great help since purchasing my Electron a year ago.

After reading your review of Tynesoft's Future Shock I bought a copy, only to find it had no loading instructions.

After approximately 40 minutes I found that CHAIN got things moving. After some time the game loaded but did not reveal any instructions.

By experimenting with the keys I found Z and X move Glob the Blob left and right but, without knowing what he is supposed to be avoiding or collecting, the game became quite boring.

On writing to Tynesoft I received a short note telling me to take the packaging apart and read the reverse side of the cover where the loading instructions are hidden. There is no indication anywhere on the outside packaging as to their whereabouts.

These showed that the correct method for loading was CHAIN"LOADER". After loading the game again I came across the pulldown information screens, one of these being the puzzle, which I have been totally stumped by.

Can anybody tell me what relevance this has in the game? Whatever I do seems to make no difference at all.

Is it me, or is it due to the lack of information supplied with this game that makes it so frustrating? Did your reviewer experience any of the problems I have come across?

Also as the game was



loading it mentioned that a cheat mode was built in but how do you find it?

Is there anybody who can help me with my problems? – A.F. Middleton, Canning Town, London.

● This type of software packaging is standard and having reviewed many similar packages the reviewer automatically took the cover out to read the instructions. It is quite normal to find the instructions on the back of the cassette insert and nearly all games are run with CHAIN™.

Can any readers help with some playing tips?

## Driven to distraction

LIKE Mr Storey – *Micro Messages* March 1987 – I too had my frustration with the printer driver program in *Electron User*, August 1986.

It was my own fault and everything worked perfectly once I realised the loading procedures, as you described in your answer to his letter.

I am surprised that no mention has been made of the error in line 810 concerning NLO – it prints out bold. I altered it to:

```
EQUB 80010FF78
```

I am very new to this fascinating hobby but, sorting out this problem (it was wrong on cassette too), was an enjoyable exercise.

The screen dump programs from the June 1986 issue of *Electron User* which I received along with the Printer Driver are equally excellent.

After trying out the exercise in the magazine I decided to print a screen and, because it was on my lap, I chose the title page of *Fishing* from the same issue. Inserting:

```
505 CALL 890F
```

printed the screen. – P.H. Keen, Crewe.

● The printer driver listing is correct. However, the sequence of control codes may not suit every printer. For instance, the code to set

bold on one printer may in fact, set underline on another.

The article accompanying the program describes how to change the listing to suit your own printer.

## Word processing

IS the Centronics GLP printer compatible with the *Electron*, as it is with the BBC Micro?

I have seen it advertised in *The Micro User*, your sister magazine, and I think it is a suitable printer for me.

Also, I don't know which cartridge to buy – *View* word processing or *Viewsheets* spreadsheet. I need to write letters, print out songs and so on. – David Lewis, Cwnbran, Gwent.

● The Centronics GLP is compatible with the *Electron* and you shouldn't experience any problems. *View* is probably the better cartridge.

## For future reference

I WOULD like to thank you for a first class and instructive magazine. The articles are most informative and not clogged up with too many advertisements.

I should also like to congratulate both ACP and Slogger for their continued support of the *Electron*, an

excellent micro by any standard.

I have owned my *Electron* for about 15 months now but, realise I have only used a fraction of its capability. It is an intriguing piece of electronics.

I have added a Plus 1, an ACP Plus 4 and use *View* frequently. I have recently had Slogger's Master ram board installed and added a Centronics GLPII printer.

The gradual build up cost wise, has been helpful and has enabled me to add additional facilities as and when I needed them and the cash became available.

*Electron User* is a mine of information and the more I use the computer the more I seem to be referring to back issues for information that I previously did not fully understand.

Such is the case for the last 12 month's issues, I have had to list my own index for future reference.

The new series of articles by Joe Pritchard – *Hardware Projects* – will undoubtedly be very useful for extending the *Electron's* usage.

I, too, am a radio amateur and would very much like to apply the micro to that field to a greater extent. This could be the basis of a good article and probably of great interest to a wide group of your readers.

Keep up the good work, and thanks again for an excellent and instructive magazine. – Herbert F. Knott, Wantage, Oxon.

● We are always on the lookout for interesting, well-written articles so, if you are

using your *Electron* in an unusual or novel way, why not write and tell us about it?

## More screens

I'M sure there are many others besides myself who have completed all nine screens of Acornsoft's *Magic Mushrooms* and would enjoy the extra 27 I have devised myself.

A lot of time and effort has gone into these and they are more varied and challenging than the original ones.

If anyone is interested in my screens please send an SAE for details. – Alan Davidson, 32c Imperial Drive, Airdrie, Scotland. ML6 9EQ.

## Chess challenge

ON the recommendation of *Micro Messages*, *Electron User* February 1987, I bought *Colossus 4 Chess*.

Now retired, I have been playing chess at club level for over 40 years and over the past three have sampled several chess computers and home computer chess programs.

However, until last year I have never had a worthwhile game from any of them. I have an *Electron* with second processor and when I read the review of *Colossus 4* I decided to buy it.

I am delighted and find it provides a real challenge at club level.

My only disappointment is that with the *Electron* version I am unable to save my games. I would like to know if there is any way I can load the BBC Micro version which includes a disc/tape save facility, on to my *Electron* E2P.

Hoping you can come up with a solution. Again, congratulations to Martin Bryant on a great chess program! – John Smellie, Glasgow.

● We haven't tried the BBC Micro version on the *Electron* but, we suspect it won't run.

**ALL programs printed in this issue are exact reproduction of listings taken from running programs which have been thoroughly tested.**

**However on the very rare occasions that mistakes may occur corrections will be published as a matter of urgency. Should you encounter error messages when you type in a program**

**they will almost certainly be the result of your own typing mistakes.**

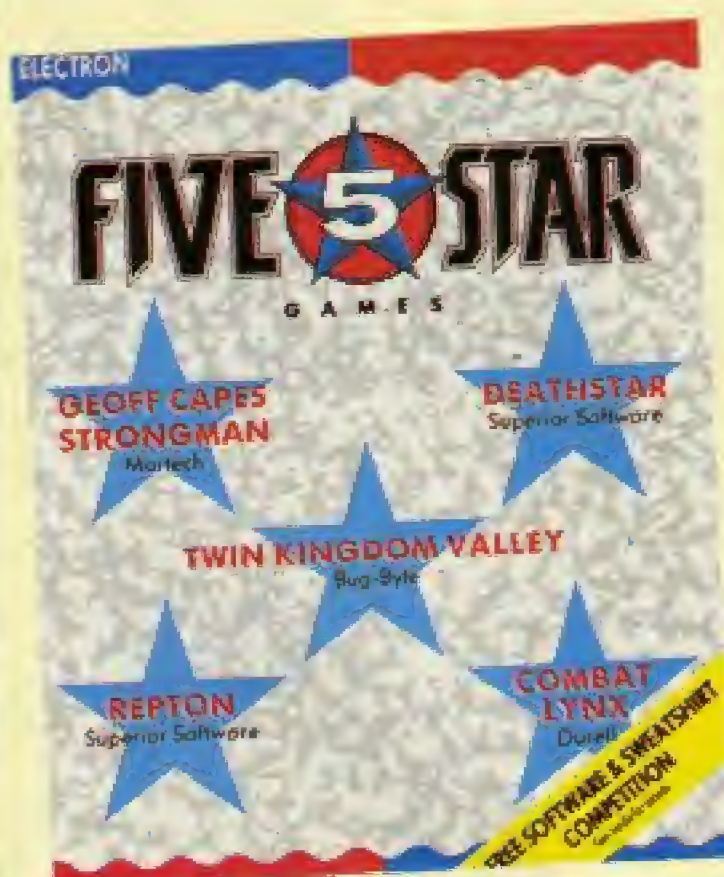
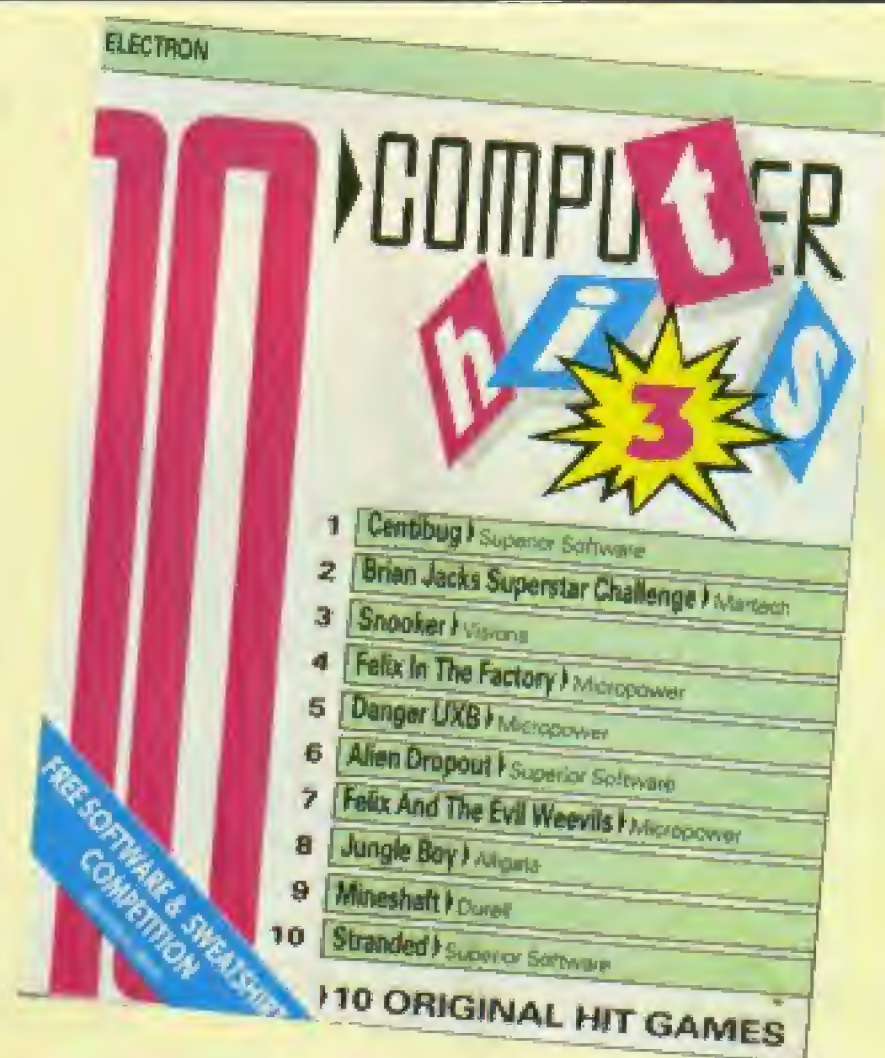
**Unfortunately we can no longer answer personal programming queries concerning these mistakes. Of course letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in the mail pages.**



# These are the games everyone wants to play!

Ten top games from leading software houses compiled into a double cassette package . . . no wonder it's been No1 in the Electron charts for week after week after week!

And now, for readers of Electron User, it's an even bigger bargain. We've done a special deal on your behalf that slashes the price even more!



## FIVE top-selling games . . . now at an incredibly low price

Beau Jolly have put together a perfectly-balanced games package to add to your collection.

Strategy and dexterity are perfectly combined in **Repton**, one of the best games ever released for the Electron.

**Deathstar** is a fast-action space shoot-'em-up in the classic tradition.

Go adventuring with **Twin Kingdom Valley** (complete with 175 illustrated locations).

Take the controls of a highly-maneuvrable helicopter in the tactical game **Combat Lynx**.

Lastly there's **Geoff Capes Strong Man** with six different event for the sports enthusiast.

Suitable for	Product	Format	RRP	Special reader offer	YOU SAVE	Offer including subscription	YOU SAVE
Electron	Computer Hits 3	Twin Tape	£9.95	£6.95	£3	£15.95	£6
Electron	Five Star Games	Twin Tape	£9.95	£6.95	£3	£15.95	£6

**TO ORDER PLEASE USE THE FORM ON PAGE 53**



SAVE  
£3

## Create your own adventures with this professional package

- Handles complex sentences and multiple command lines
- Accepts abbreviations, as well as 'it'
- Built in text-compression routine
- Produce massive multi-loading adventures using the Chain command
- Comes complete with 24-page manual

And once you've written your adventure you are free to market it through any company – without payment to Incentive.

Normal Price £14.95

**SPECIAL  
OFFER  
PRICE**

**£11.95**

ADVENTURE CREATOR	RRP	Special reader offer	YOU SAVE	Offer including subscription	YOU SAVE
Cassette	£14.95	£11.95	£3	£20.95	£6

SAVE  
£5

## Three adventure classics – together for the first time!

Rick Hanson, Project Thesius and Myorem are among the best adventures available for any computer. Now you can buy them in one great package. . . Rick Hanson Trilogy – Saga of a Spy.

The handsome, black and gold presentation box contains:

- Three cassettes
- Three hint sheets
- An instruction booklet
- An Adventurer's notebook
- A smart Robico pen

Previously the three titles would have cost you £29.95. Saga of a Spy, with its extra goodies, retails at £23.95. But we've gone one better – with a special offer price of

**ONLY £18.95**

RICK HANSON TRILOGY	RRP	Special reader offer	YOU SAVE	Offer including subscription	YOU SAVE
Cassette	£23.95	£18.95	£5	£25.95	£10



**TO ORDER PLEASE USE THE FORM ON PAGE 53**



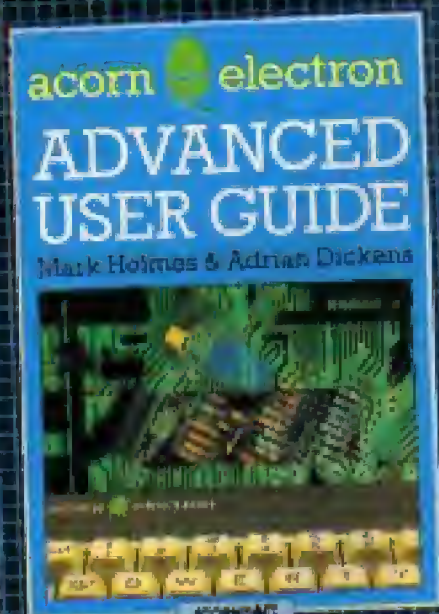
# This is *THE* ultimate guide to the Electron!

This detailed guide to the Electron's operating system is a must for every serious Electron user. In its information packed pages you'll find:

- ★ Full details of how to implement the powerful \*FX/OSBYTE calls.
- ★ Page ROMs revealed: The way they work and how to write your own.
- ★ Programming the ULA - all you need to know.
- ★ Full coverage of memory allocation and usage - make every byte count.
- ★ Complete circuit diagram: How to use the expansion capabilities Electron's exciting to the full.

and much, much more . . .

**Save  
£3  
on this  
classic book!**



Quite simply, the Electron Advanced User Guide is *THE* essential handbook that will allow you to exploit the full potential of the Electron.

Don't miss this money-saving offer!

**Only £3.45** (inc. P&P)

**SAVE a massive £6!**

(Normal price £9.45)

UK readers only

**Exclusive offers ONLY for readers of Electron User**

**Was £5.95 NOW £2.95**

This best-selling book takes the reader through the fundamentals of writing programs. Its hands-on approach has been specifically designed to teach the absolute novice not only the formal rules of Basic but also that elusive quality - good programming style.

By working through its many examples, the reader will gain a clear insight into structured programming and will quickly acquire the ability to use structured techniques in creating his own programs.



UK readers only



**ONLY  
£3.95**

**Your Electron needs protecting!**

Protect your Electron with our luxury dust cover made of soft pliable water-resistant vinyl, bound with strong cotton and decorated with the Electron User logo.

**Keep your copies neat and clean!**

This handsome binder is bound in attractive red pvc with the Electron User logo in gold blocking on the spine. It will hold 12 magazines firmly secured in place by metal rods.

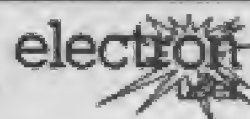


**ONLY  
£3.95**





# MAIL ORDER OFFERS



# ORDER FORM

All prices include postage, packing and VAT

Overseas orders sent exclusively by Air Mail

£ p

**Electron** UK £12 3001  
Europe & Eire £20 3003  
Overseas £35 3004  
**User annual subscription** Commence with \_\_\_\_\_ issue

**Renewals** UK £12 3002  
Europe & Eire £20 3476  
Overseas £35 3477

**The Adventure Creator** **NEW**  
With sub\* Without sub  
Cassette only £8.95 £11.95 3122/3123  
Add £2 for Europe £5 for Overseas  
\* These offers only available if accompanied by a subscription order or renewal

**Rick Hanson Trilogy** **NEW**  
With sub\* Without sub  
Cassette only £13.95 £18.95 3124/3125  
Add £2 for Europe £5 for Overseas  
\* These offers only available if accompanied by a subscription order or renewal

**Computer Hits 3** **NEW**  
With sub\* Without sub  
Cassette only £3.95 £6.95 3117/3118  
Add £2 for Europe £5 for Overseas  
\* These offers only available if accompanied by a subscription order or renewal

**Five Star** **NEW**  
With sub\* Without sub  
Cassette only £3.95 £6.95 3126/3127  
Add £2 for Europe £5 for Overseas  
\* These offers only available if accompanied by a subscription order or renewal

**Repton 3**  
With sub\* Without sub  
Cassette only £4.95 £7.95 3009/3010  
Add £2 for Europe £5 for Overseas  
\* These offers only available if accompanied by a subscription order or renewal

**Electron User back issues**

Issue	Price	Code
February 1986	£1.50 UK	3031
April 1986	£2.50 Europe	3201
May 1986	£3.50 Overseas	3202
June 1986		3203
July 1986		3204
August 1986		3205
September 1986		3206
October 1986		3207
November 1986		3208
December 1986		3209
January 1987		3210
February 1987		3211
March 1987		3212
April 1987		3213

**Electron User back issue bundles**

Bundle	Period	Price	Code
Bundle 1	May 84-Dec 84	£5.90 UK	3073/11
Bundle 2	Jan 85-Jun 85	£17.95 UK	3074/12
Bundle 3	July 85-Dec 85	£20.95 Europe	3075/13

Magazine only UK £5.90 Europe £8.90 Overseas £15.90  
Magazine + Tape UK £17.95 Europe £20.95 Overseas £27.95

**Electron User tapes/discs**  
Tape £3.75, Discs £4.75. Overseas/Europe add £1

Title	Issue	Price	Code
Fruit Worm	Jan 1986	£3.75	3056
Grebit	Feb 1986	£3.75	3057
Grand Prix	Mar 1986	£3.75	3300
Invasion Force	April 1986	£3.75	3301
Missile Jammer	May 1986	£3.75	3302
Fishing	June 1986	£3.75	3303
Royal Wedding	July 1986	£3.75	3304
Howzat	Aug 1986	£3.75	3305
Cavern Capers	Sept 1986	£3.75	3306
Rat Catcher	Oct 1986	£3.75	3307
Day at the Races	Nov 1986	£3.75	3308
Santa's Sleigh	Dec 1986	£3.75	3309
Grid Warrior	Jan 1987	£3.75	3310
Maze	Feb 1987	£3.75	3311
Super Boss	Mar 1987	£3.75	3312
Dragons Doom	Apr 1987	£3.75	3313
Hectic Henry	May 1987	£3.75	3314

Valid to May 31, 1987

Please enter number required in box £ p

## Cassette tape annual subscription

UK £35 3005  
Europe/Overseas £45  
Commence with \_\_\_\_\_ issue

**Renewals** UK £35 3006  
Europe/Overseas £45

## Education Special Vol. 2

Classroom Computing on the Electron

Magazine + Electron Cassette £3.95 3007  
Magazine + Electron 3.5" Disc £4.95 3008  
Add £2 for Europe £4 for Overseas

## Fun School

	Tape £4.95	3.5" Disc £5.95
Ages 2-5	3080/3108	
Ages 5-8	3081/3109	
Ages 8-12	3082/3110	

Add £1 for Europe/Overseas

## Getting Started in BBC Basic

UK only £2.95 3100

## Acornsoft Database

Needs a Plus 3 Disc £9.95 3119

Add £2 for Europe; £5 for Overseas

## Advanced User Guide

UK only £3.45 3072

## Mini Office

UK £5.95 3062  
Europe/Overseas £6.95

## Magic Sword

	Tape £5.95	3.5" Disc £6.95
3065/3105		

Add £2 for Europe; £5 for Overseas

## Ten of the Best

	Tape £5.95	3.5" Disc £6.95
Volume 1	3068/3111	
Volume 2	3069/3112	
Volume 3	3070/3113	
Volume 4	3120/3121	

Add £1 for Europe/Overseas

## French on the Run

Tape £9.95 3115

## Micro Olympics

Add £1 for Europe/Overseas Tape £5.95 3074

## Classic Arcade Games

Add £1 for Europe/Overseas 3084/3107

## Classic Card and Board Games

No.	Tape	3.5" Disc	Price	Code
No. 1	Tape	£5.95	3090	
	3.5" Disc	£7.95	3092	
No. 2	Tape	£5.95	3091	
	3.5" Disc	£7.95	3093	

Add £1 for Europe/Overseas

## Electron Dust cover

UK £3.95 3058  
Europe/Overseas £4.95

## Magazine Binder

UK £3.95 3059  
Europe £8.95  
Overseas £10.95

=====

TOTAL

Send to: Electron User, FREEPOST, Europa House,  
68 Chester Road, Hazel Grove, Stockport SK7 5NY.  
(No stamp needed if posted in UK. Please allow 28 days for delivery)

Order at any time of the day or night

Telephone Orders:  
061-439 7931

Orders by Post:  
Key '93, then 61-4593343

MicroLink/Telecom Gold  
72-MA-0001

Don't forget to give your name, address and credit card number

ENQUIRIES ONLY: 061-480 0171 9am-5pm

Payment please indicate method (✓)

☐ Access/Mastercard/Eurocard/S Barclaycard/Visa

No. \_\_\_\_\_

☐ Cheque/Eurocheque made payable to Database Publications Ltd.

Name \_\_\_\_\_

Signed \_\_\_\_\_

Address \_\_\_\_\_

Post Code \_\_\_\_\_

Tel \_\_\_\_\_

EU5



## MITHRAS SOFTWARE

Buy Best Sellers at our Discount Price or pay the normal retail price and choose one of our Bargain Games FREE. New titles are available from release day.

	Price with free game	Discount Price		Price with free game	Discount Price
<b>BEST SELLERS</b>					
Superior Collection (case)	9.95	7.50	Impossible Mission	8.95	6.95
Superior Collection (disc)	14.95	12.50	Crystal Castle	8.95	6.95
Acromash Hit Vol I	9.95	7.50	Five Star Games	9.95	7.50
Acromash Hit Vol II	9.95	7.50	Computer Hit Vol 3	8.95	7.50
Ravenskull	9.95	7.50	Thunderstruck	7.95	6.50
Repton 3	9.95	7.50	Thunderstruck II	7.95	6.50
Galaxion	9.95	7.50	Future Shock	7.95	6.50
Claydel	9.95	7.50	Jet Set Willy	7.95	6.50
Elia	12.95	10.95	Jet Set Willy 2	7.95	6.50
Yin Ai Kung Fu II	8.95	6.95	Paymania	7.95	6.50
Way of the Exploding Fist	9.95	7.50	Last of the Free	7.95	6.50
Beach Head	8.95	6.95	Thriller	7.95	6.50
Strike Force Harrier	9.95	7.50	AES Power Pack	9.95	7.50
Phantom Combat	9.95	7.50	Kylem	7.95	6.50
The Big K.O.	7.95	6.50	Doogey Geesers	8.95	6.95
Goal	7.95	6.50	Colossus Chase	9.95	7.50
Footballer of the Year	9.95	7.50	The Adventure Creator	14.95	12.95
Winter Olympics	7.95	6.50	The Quill	18.95	12.95

### THE BARGAIN LIST - £2.75 each or 3 for £7.50

Please give alternatives if possible

Snoozer (Visions)	Golf (Yes!)	Ghosts	MYSTERIOUS ADV.
Cybertron Mission	Super Pool	Swoop	Arrow of Death
Escape Moonbase	Gunslinger	Steak Car	Circus
Alpha	Blitzkrieg	Killer Gorilla	Escape from
Galactic Commander	Kamakszi	Rubble Trouble	Pulsar 7
Bandits at 3 o'clock	Rig Attack	Danger UXB	Golden Baton
Felix & Frank	U.K. P.M.	The Mine	Partners 8
Monsters	Position	Frenzy	Andromeda
Electron Invaders	Moonrider	Bumble Bee	Time Machine
Jet Power Jack	Swag	Stolen Lamp	Ten Little Indians
Star Drifter			Wazworks
Adventure (Micropower)			Wizard Akryz

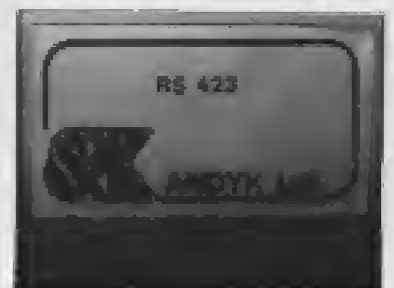
### OTHER TITLES AVAILABLE

Lamont Adventures	Football Manager	6.95	Unimania	2.99
The Rising of Baldrick	Bumper Bundle	3.95	Hunky Dory	2.99
Wychwood	Lip	2.95	Gunguis	2.99
The Nine Dancers	Faith	2.95	Man-B	2.99
Castle of Riddles	S. Pizzazi	4.95	Cricchet	2.95
QuestProbe 2: Spiderman	Flight Path 737 (Axiom)	2.99	Tennis	2.95
			Ice Hockey	2.95

ALL PRICES INCLUDE P&P FOR UK AND DESPATCH WITHIN 1 DAYS OF RECEIPT OF ORDER BY FIRST CLASS POST  
(Orders to Europe and Eire add 50p for each item. Worldwide add £1 for tel and 50p for each other item)  
Please send cheque payable through a UK Bank or arrange for payment by Postal Girocheque  
PLEASE QUOTE ELECTRON (a BBC Ltd is available on request)  
and send cheque or PO payable to:

**MITHRAS SOFTWARE**  
PO Box 151, Maulden, Bedford MK45 2YH  
Tel: 0525 402630

## ANDYK Ltd



### EPROM CARTRIDGE

Able to take application software. Also one or two ROMs. Allows use of utility ROMs. Plugs into Plus 1: **£9.99 + £1 P&P**

### RS423 SERIAL PORT

Has drive capability and software interface as the BBC Model 'B'. plugs directly into Plus 1 cartridge slot.

Price: **£34.99 + £1 P&P**

### COMMS PACKAGE I

RS423, eprom cartridge plus "Termi II" offering V252, BBC soft, TTY and user defined terminals **£79.99**

### COMMS PACKAGE II

RS423, eprom cartridge plus "Communicator" offering VT100 emulation **£109.99**

**MODEMS FOR USE WITH ABOVE PACKAGES  
AVAILABLE WHILE STOCKS LAST £24.99**

**USER PORT AND EPROM PROGRAMMER DETAILS  
AVAILABLE SOON**



**58 PARK LANE, WESHAM  
LANCASHIRE PR4 3HG  
TEL: (0772) 682658**



**Tel: Order Hotline 0332 - 365280  
Mon - Fri 9am - 5pm**

# FIRST BYTE INTERFACES



## JOYSTICK INTERFACE

The leading joystick interface for the Electron, over 20,000 sold!!

Adds joystick movement to most Electron Games

Colour co-ordinated high quality plastic case which plugs directly into the back of the Electron

Comes complete with game conversion tape

Price **£19.95**

## PRINTER INTERFACE

Works with standard Centronics/Parallel Printers  
Adds BBC style printer commands to your Electron  
Requires no software patches, all commands are handled directly by the Printer Interface

Simple instructions are included

(Ideal to work in conjunction with Mini Office)

Colour co-ordinated high quality plastic case

Printer Cable (Sep) **£9.95**

Printer Interface Price **£19.95**

**FIRST BYTE COMPUTERS, 10 CASTLEFIELDS, MAIN CENTRE, DERBY DE1 2PE**

### MAIL ORDER FORM.

Please rush me the following items

- ☐ First Byte Joystick Interface @ **£19.95**  
☐ First Byte Printer Interface @ **£19.95**  
☐ Printer Cable (BBC/Electron Comp) @ **£9.95**

I enclose a cheque made payable to FBC Systems Ltd ☐

I wish to pay by Access ☐ Visa ☐ Expiry Date \_\_\_\_\_

Card No.

Signed \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Tel. \_\_\_\_\_



**ANIMALS** is a fascinating educational program for youngsters featuring artificial intelligence, and with it your Electron can demonstrate its ability to learn.

Through a series of questions and answers it expands its knowledge of the world and builds up a considerable database of facts and figures about the animal kingdom.

After just an hour's work your micro will impress you with an expert's detailed knowledge of all kinds of animals – try it on your friends and watch their amazement as your Electron holds an intelligent conversation with them.

When the program is run you'll be asked if you wish to load the animals learnt last time and add to the information already acquired. Of course, if this is the first time it has been used you'll have to answer No.

You'll be told how many animals your Electron knows and the object of the game is to try and think of one it hasn't heard of before.

When you start this will be easy, as it only knows two. However, things will soon change, and it will become more and more difficult to catch your micro out.

When you've thought of an animal tap the spacebar and the Electron will ask a series of questions to which you answer either yes or no – press Y or N. Has it got four legs? Does it live at the North Pole? – and so on.

It will then try to guess the animal. If it is correct you can have another go and try to catch it out with a different beast.

What makes this program so fascinating is that when it is wrong the Electron will ask you to teach it – through questions and answers – the difference between the animal it was thinking of

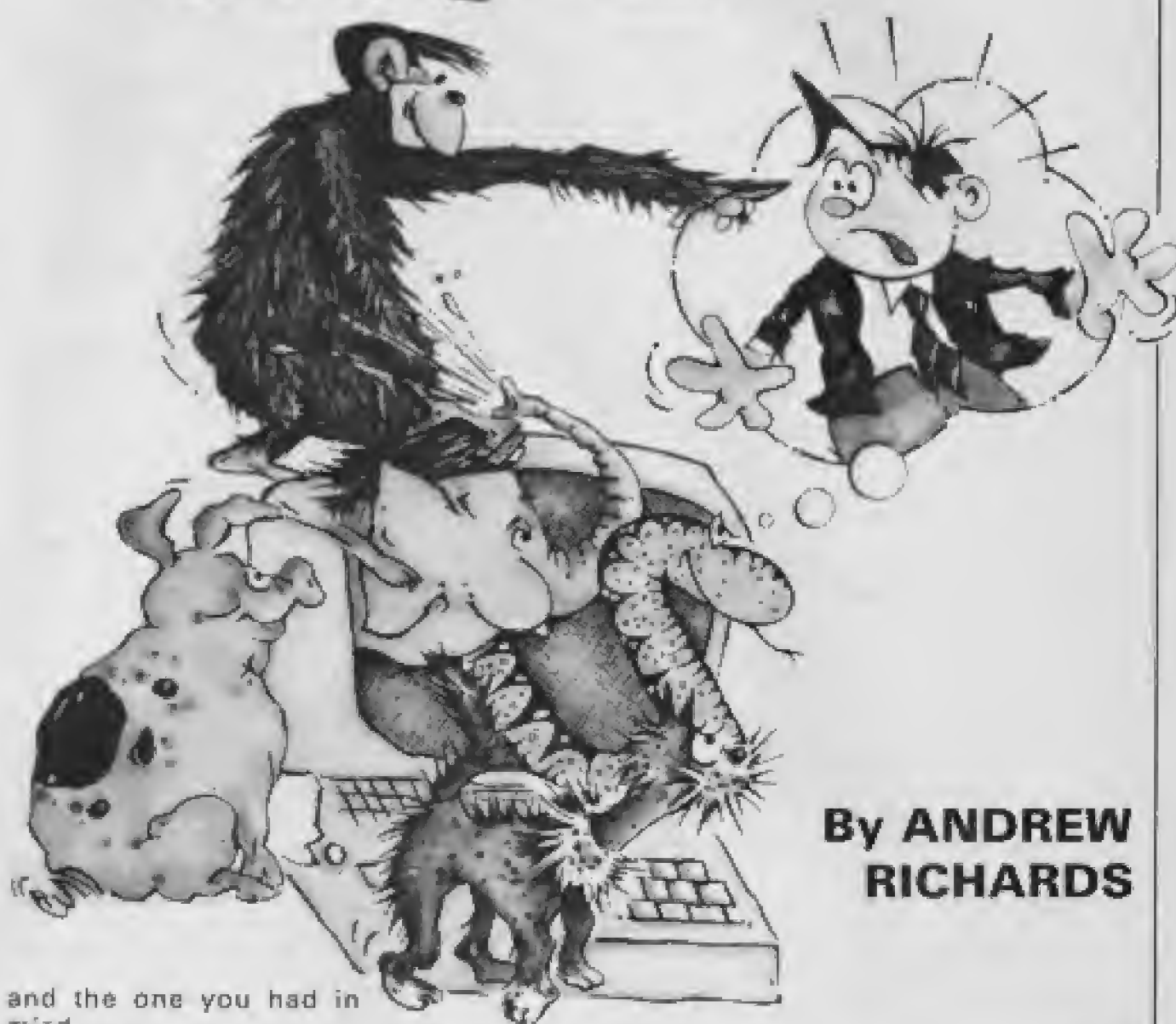
and the one you had in mind.

For instance, suppose you were thinking of a robin and your Electron thought it was a blackbird.

When it narrows the subject down to a bird it should ask: "Has it got a red breast?". If it has it must be a robin.

Next time you think of a bird it will remember this fact and ask if it has a red breast. So it learns as you play – and there is enough room for around 100 animals. There's plenty to teach it, so get cracking and turn your micro into an expert to rival David Attenborough.

# ANIMALS



By **ANDREW RICHARDS**

## The Animal Game

What question could I ask to tell the difference between a robin and a blackbird?

=>Has it got a red breast?

What would the answer be for a robin (Y or N)?\_

### VARIABLES

key\$	Key pressed.
Qs(100)	Questions asked.
question	Question number.
As(100)	Animals known.
won	Number of games won.
lost	Number of games lost.

### PROCEDURES

assemble	Gives three colours in Mode 6.
initialise	Dimensions arrays.
score	Prints score.
question	Asks a question.
guess	Guesses the animal.
save	Save the animals learned
load	Loads the animals learned last time.

Full listing starts on Page 56



## Animals listing

### From Page 55

```

10 REM Animal Game
20 REM By Andrew Richards
30 REM (c) Electron User
40 ON ERROR GOTO 1720
50 MODE 6
60 PROCassemble
70 PROCinstructions
80 PROCinitialise
90 REPEAT
100 PROCscore
110 REPEAT
120 PROCquestion
130 IF key$="Y" j=YX(i)
140 IF key$="N" j=NX(i)
150 UNTIL j<1
160 PROCguess
170 IF ans$="Y" PROCwin ELSE
PROCclose
180 PROCanother
190 UNTIL key$="N"
200 PROCsave
210 PRINT "Ok...":FX4
220 END
230
240 DEF PROCcolour(CX)
250 RESTORE 300
260 FOR IX=1 TO CX
270 READ AX,BX
280 NEXT
290 colour1=AX:colour2=BX
300 DATA 84,17,80,21,80,17,2
0,21,20,17,16,21,16,17
310 ENDPROC
320
330 DEF PROCassemble
340 *FX13,4
350 FOR i=0 TO 2 STEP 2
360 PX=BC00
370 [OPT i
380 PH:PHA:TXA:PHA:TYA:PHA
390 LDA #16:STA &FE08
400 LDA #17:STA &FE09
410 LDX #244
420 .pause
430 LDY #5
440 .loop
450 DEY:BNE loop
460 DEY:BNE pause
470 .colour
480 LDA #80:STA &FE08
490 LDA #17:STA &FE09
500 PLA:LAY:PLA:TAX:PLA:PLP
510 RTS
520 ]
530 NEXT
540 ?&220=&000:??&221=&C
550 ENDPROC
560
570 DEF PROCinitialise
580 CLS:*FX16
590 DIM QS(100),AS(100),YX(1
00),NX(100)
600 won=0:lost=0
610 YX(1)=-1:NX(1)=-2
620 QS(1)="Has it got 4 legs
?"
630 AS(1)="a dog":AS(2)="a s
pider"
640 question=1:animals=2
650 PRINT TAB(0,5)"Do you wa
nt to load the animals""lear
nt last time? (Press Y or N)";
660 IF FNget="Y" PROCload
670 CLS:COLOUR8:COLOUR129:PR
INT "The Animal Game ":COLOUR
1:COLOUR128
680 VDU28,B,24,39,3

```



### The Animal Game

I know 12 animals.  
I have won 15 and lost 10 games.

Think of an animal, then press  
space when you are ready...-

```

690 *FX14,4
700 ENDPROC
710
720 DEF PROCwin
730 PROCcolour(2)
740 won=won+1:VDU7
750 PRINT TAB(0,5)"yippee I
got it!"
760 ENDPROC
770
780 DEF PROCclose
790 PROCcolour(3)
800 question=question+1
810 lost=lost+1
820 animals=animals+1
830 SOUND1,-15,0,20
840 PRINT TAB(0,4):*FX202,4
8
850 INPUT "I give up!""Wha
t animal is it ",get$
860 IF LEFT$(get$,2)<>"an" &
NO LEFT$(get$,2)<>"a " get$="a
"+get$
870 AS(animals)=get$
880 CLS:PROCcolour(5)
890 PRINT "What question cou
ld I ask to""tell the differe
nce between""AS(animals)" and
"AS(-j)";?"TAB(0,7):*FX202,40
900 INPUT "=>"get$
910 IF get$>"2" get$=(CHR$(AS
C(get$)AND &DF)+MID$(get$,2)
920 IF RIGHT$(get$,1)<>"?" g
et$=get$+"?"
930 QS(question)=get$
940 PRINT TAB(0,12)"What wou
ld the answer be""for ";COLO
UR129:COLOUR8:PRINT "AS(anima
ls) ";COLOUR128:COLOUR1:PRIN
T " (Y or N)??";
950 ans$=FNget
960 IF ans$="Y" YX(question)

```

```

=-animals:NX(question)=j ELSE
YX(question)=j:NX(question)=-a
nimals
970 IF key$="N" NX(i)=questi
on ELSE YX(i)=question
980 ENDPROC
990
1000 DEF PROCscore
1010 PROCcolour(6):VDU7
1020 PRINT "I know ";animals;
" animals."
1030 PRINT "I have won ";won;
" and lost ";lost;" games."
1040 PRINT TAB(0,5)"Think of
an animal, then press""space
when you are ready...";
1050 REPEAT UNTIL GET
1060 j=1
1070 ENDPROC
1080
1090 DEF PROCquestion
1100 i=j:VDU12,7
1110 PRINT QS(i);
1120 key$=FNget
1130 ENDPROC
1140
1150 DEF PROCguess
1160 CLS
1170 PRINT "Are you thinking
of "AS(-j)";?";
1180 ans$=FNget
1190 ENDPROC
1200
1210 DEF PROCanother
1220 COLOUR129:COLOUR8:PRINT
""Do you want to continue?";:
COLOUR128:COLOUR1
1230 key$=FNget:CLS
1240 ENDPROC
1250
1260 DEF PROCsave
1270 CLS:*FX13,4

```

```

1280 PRINT "Do you want to s
ave the animals?";
1290 IF FNget="N" ENDPROC
1300 PRINT
1310 file=OPENOUT "Data"
1320 PRINT# file,question,ani
mals,won,lost
1330 FOR i=1 TO question
1340 PRINT# file,QS(i),YX(i),
NX(i)
1350 NEXT
1360 FOR i=1 TO animals
1370 PRINT# file,AS(i)
1380 NEXT
1390 CLOSE# file
1400 ENDPROC
1410
1420 DEF PROCload
1430 PRINT "Searching for da
ta...";
1440 file=OPENIN "Data"
1450 INPUT# file,question,ani
mals,won,lost
1460 FOR i=1 TO question
1470 INPUT# file,QS(i),YX(i),
NX(i)
1480 NEXT
1490 FOR i=1 TO animals
1500 INPUT# file,AS(i)
1510 NEXT
1520 CLOSE# file
1530 ENDPROC
1540
1550 DEF PROCinstructions
1560 *FX4,1
1570 PRINT TAB(7)*** THE ANI
MAL GAME ***
1580 PRINT "In most educatio
nal programs I try to""teach
YOU something, with this progr
am""you have to teach ME."
1590 PRINT "You have to thin
k of an animal and I""have to
try to guess it by asking you
""questions."
1600 PRINT "You can only ans
wer yes or no (press Y or N),
to the questions and if I gue
ss wrong then you have to tel
l me what""question I should
have asked."
1610 PRINT "Press a key to s
tart...";
1620 REPEAT UNTIL GET
1630 ENDPROC
1640
1650 DEF FNget
1660 REPEAT:*FX21
1670 get$=(CHR$(GET AND &0F)
1680 UNTIL INSTR("YyNn",get$)
1690 PRINT get$;
1700 =get$
1710
1720 REM Error
1730 MODE6:*FX13,4
1740 CLOSE#0:*FX4
1750 IF ERR=17 GOTO200
1760 PRINT":REPORT:PRINT" at
line ";ERR
1770 Q$CL:KEYB LIST>STR$ERR
":M"
1780 *FX21
1790 *FX138,0,128

```

This listing is included in  
this month's cassette  
tape offer. See order  
form on Page 53.



# WORDWISE

S O F T W A R E

Whatever your subject...

French, First Aid, Football,  
Spelling, Science, Spanish,  
Sport, Scotland, England,  
English Words, German,  
General Knowledge,  
Geography, Italian, Arithmetic,  
Natural History.

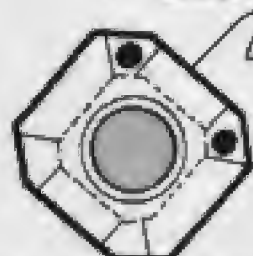
**Let your computer  
help you learn**

Write or phone for a FREE 20  
page illustrated catalogue of  
our Leisure and Educational  
Software

**KOSMOS SOFTWARE LIMITED**  
FREEPOST (no stamp needed)  
DUNSTABLE, Beds. LU5 6BR  
Tel: 05255 3942 or 5406

★ NEW ★ NEW ★ NEW

## ★ ELECTRON TRACKBALL



Add a new dimension and  
mouse-like control to your  
Electron graphics, art, drawings,  
CAD, X-Y movements and  
games. Interfaces to  
analogue port

**Special Offer**  
**£17.90 inc VAT**

## ★ MOUSEPAINT SOFTWARE

Superb icon driven drawing package for both  
Trackball and Mouse. Cassette save and load,  
outline or solid circles, ellipses, rubber  
rectangles, text, corrected dotted or solid lines,  
rubber band lines, colour choice, scribble, infinite  
paint brushes, hatch or plain fill in  
4 out of 8 colours. Epson print.

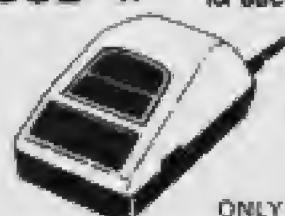
**£10.00** Incl. VAT

## ★ ELECTRON MOUSE ★

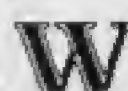
Also available  
for BBC

At last! To date BBC owners have had all the fun  
with mice. Now Electron users can enjoy the control  
and convenience of commanding the cursor and  
their computer with a 3 button mouse. Natural hand-  
eye co-ordination makes it a doddle to use.  
Requires Plus 1.  
Ani-mouse rolls on a slip free rubber coated ball.  
Incorporate into your own programs.

MOUSEPAINT user friendly but powerful  
graphics package.



ONLY  
**£34.50**  
Incl. VAT



**WIGMORE HOUSE LTD**  
32 Saville Row,  
London W1X 1AG.

Access, Cheques,  
P.O., Cash  
01-734 8826

P & P = £2.00

**MORE RAM AND SPEED!**

## E2P-6502

**PMS ADD SECOND PROCESSOR  
POWER TO THE ELK!**

Disappointed by the speed of your Electron?  
Would you like an ELK that performs like a Beeb?  
Is shortage of RAM getting you down?  
Unable to use 80 column display with View?

**IF YOUR ANSWER IS YES -**

**THEN PMS HAVE THE SOLUTION**

**LOOK AT THIS INCREDIBLE SPECIFICATION:**

- 300% speed increase in Basic (Mode 0)
- 3.5 times more text in View (Mode 3)
- 30K Basic programs in all modes
- 60K free for machine code
- 'Hi' Languages (Basic & View) give at least 44K
- Absolutely no modifications required
- Plugs into Plus 1 slot or ROMBOX Plus
- Runs BBC ROM Languages

**ONLY £89**

INC VAT  
+ £2 DELIVERY

**THE ULTIMATE "ADD-ON" FOR THE  
ELECTRON**

## WORDWISE PLUS ON THE ELECTRON!!

Now, thanks to the power of the E2P Second Processor, Electron users can run the most popular BBC wordprocessor - Computer Concept's WORDWISE PLUS. PMS programmers have re-written the MODE 7, WORDWISE screen handling, and keyboard routines to work on an Electron with E2P.

Not only this, but because a Second Processor is being used, a massive 42K - yes! over 42,000 characters - of text can be handled, with PREVIEW ALWAYS in an 80 column MODE II. Add to this the fact that E2P WORDWISE PLUS is totally disk based, requiring NO ROMS or cartridges.

E2P WORDWISE PLUS is a full implementation of the original WORDWISE PLUS, with all the SEGMENT MENU features maintained. WORDWISE files created on a BBC can be loaded into the Electron and vice versa.

PMS are offering E2P WORDWISE PLUS at an introductory price of

**ONLY £39.95 (inc VAT & delivery).**

E2P WORDWISE PLUS is supplied on 3.5" or 5.25" disk (state size & DFS format, when ordering) together with full WORDWISE documentation. E2P WORDWISE PLUS is available ONLY from PMS.

**NOTE: This is a special version of WORDWISE which will NOT run on a BBC or unexpanded Electron.**

PMS overseas dealers: VELOBYTE COMPUTERS, Schiedamsedijk 5A-6A, 3011 EB Rotterdam, Netherlands.

### ORDER FORM

Please send me \_\_\_\_\_ E2P-6502 Second Processor(s)  
\_\_\_\_\_ E2P Wordwise Plus Disk(s) (3.5"/5.25")

I enclose cheque/postal orders for a total of £ \_\_\_\_\_

OR

Please debit my ACCESS/VISA account by £ \_\_\_\_\_

A/c No. \_\_\_\_\_ Expiry date \_\_\_\_\_

NAME \_\_\_\_\_ SIGNED \_\_\_\_\_

ADDRESS \_\_\_\_\_

POSTCODE \_\_\_\_\_

E2P Operating System required on:

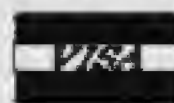
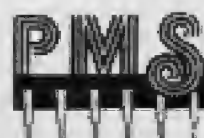
5.25in disk/3.5in disk/tape/ROM (delete as required)

CHEQUES SHOULD BE MADE PAYABLE TO 'PERMANENT MEMORY SYSTEMS'

Send to: Permanent Memory Systems, 38 Mount Cameron Drive,  
St Leonards, EAST KILBRIDE G74 2ES

Please allow 28 days for delivery

PHONE 03552 32796



DEALER ENQUIRIES WELCOME



THIS month we'll continue where we left off last time and see how we can use a potential divider to measure light and heat. But, before we start this month's project, the Analogue to Digital Converter must be calibrated.

What we need to do is measure the ADC's output for a given input, say one volt. This will enable us to interpret the results of our experiments more accurately.

The most convenient way to calibrate the ADC makes use of VREF. This should be a steady 1.8V – it does vary a little, but not enough for us to worry about at the moment.

The simple circuit shown in Figure 1 should first be set up. Now enter and run Program 1.

```
10 PROGRAM 1
20 value=0
30 FOR I=1 TO 200
40 value=value+ADVAL(1)
50 NEXT I
60 PRINT INT((value/200)
/256)
```

The result printed is the ADC value that corresponds to an input of 1.8V – scaled down to a more convenient size by dividing by 256. The value output by the ADC for an input of 1V will be 1.8/

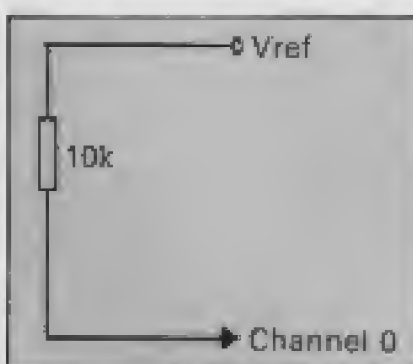


Figure 1: Calibrating the ADC

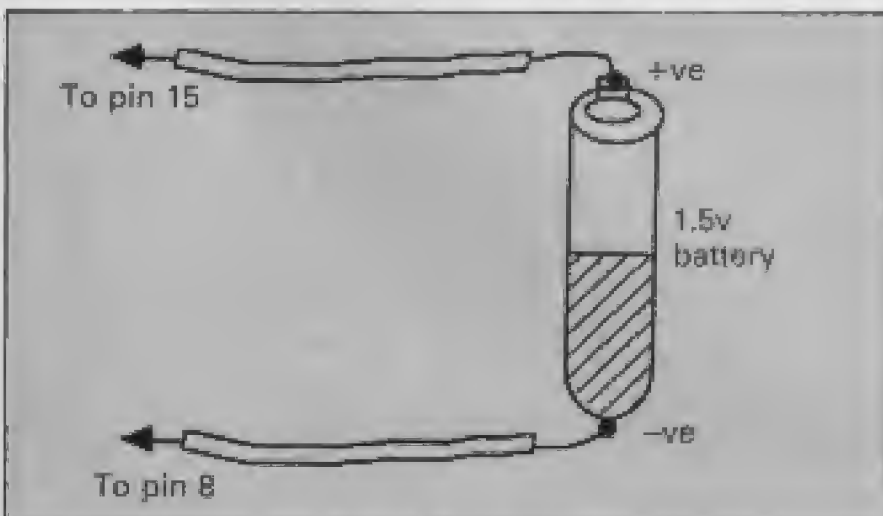


Figure 2: Calibrating the ADC using a battery

# DIVIDE AND CONQUER

Part V of the Plus I series by JOE PRITCHARD

value. Now we can calculate the value for any input.

There is an alternative approach available if you've got access to a voltmeter. Take a 1.5V battery, measure its output accurately then connect it to the ADC input channel as shown in Figure 2.

It is essential that you make sure the voltage of the battery is less than 1.8V, otherwise you may damage your Plus 1.

The same calculation as before can then be carried out but this time with the voltage displayed by the meter replacing the 1.8V of VREF.

Now that we've calibrated the ADC let's put it to good use. We'll see how to make up a circuit that allows us to detect changes in light levels.

Clearly, we're going to need some sort of transducer to convert the light into some parameter that can be measured by our ADC.

Last month we saw how the ADC measures electrical voltage and that changes in resistance could be converted into a voltage by employing a potential

divider. What we require is a resistor whose value varies with the intensity of light shining on it.

Such components do exist – they're called light dependent resistors (LDRs). These components are resistors whose value varies from a low resistance in bright light to a very high resistance in the dark.

Figure 3 shows a typical example and the symbols used to represent them in circuit diagrams.

We'll be using an LDR called the ORP12 in our experiments. This common component is available from many mail order companies for less than a pound, (try Tandy, part number 276-116A).

It responds to light fairly slowly in electronic terms and a change of resistance in the LDR due to a change in light from absolute darkness to very bright light can occasionally take a second or so to accomplish. Hardly fast in our world of

microprocessors.

There are faster light sensitive components which work in a slightly different fashion and we'll look at these in a future article. For now though, the simple LDR will allow you to have quite a lot of fun.

They are most sensitive to light in the visible spectrum, like our eyes, but they can also detect infra-red radiation. This is light that lies beyond the red end of the spectrum and is given off by hot objects such as the sun, fires or light bulbs. You can't see it but you can certainly feel it on your skin.

So much for the theory, now let's get on with the project. Figure 4 shows a circuit for use with an ORP12 LDR. You can see that it's a simple potential divider circuit like that used last month except that one of the fixed resistors has been replaced by the ORP12.

Figure 4 also shows one way of mounting it. Make

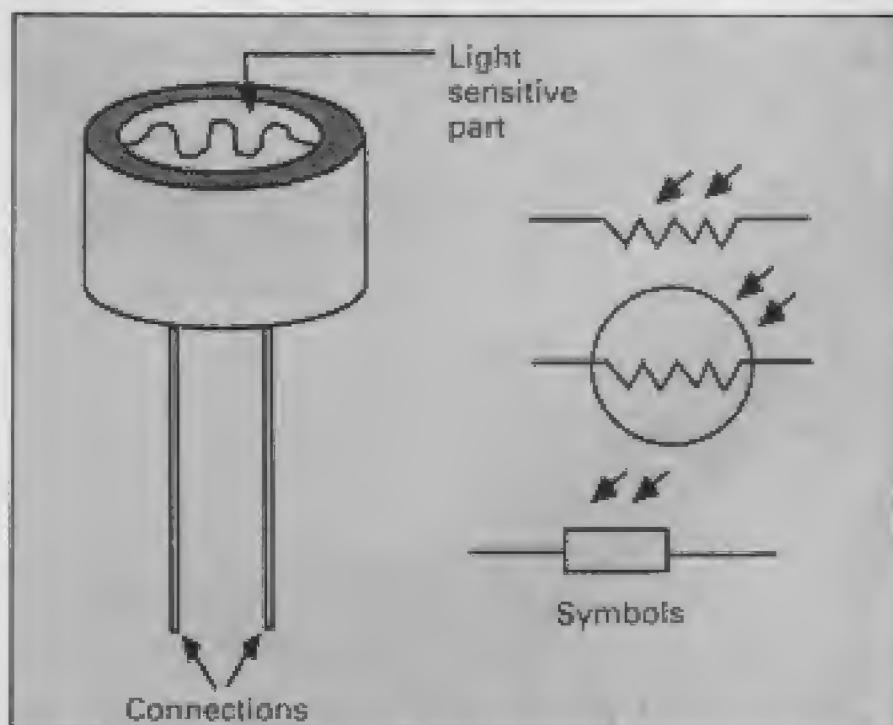


Figure 3: Light dependent resistors



# Hardware Projects

sure there are no short circuits between the wires.

There are two important points to note:

- Don't be too heavy handed with the soldering iron as LDRs are a little more sensitive to heat than other resistors.

- A quick inspection of the LDR will show that the wires come out of the back of the device and that they're not rigid. Don't wobble them around or you'll find that they break off at the case.

The simple circuit in Figure IV can be tested using Program II. Plug the circuit into the Plus 1's analogue port, turn on the Electron then enter and run the listing.

```
10 REM PROGRAM II
20 REM LDR test
30 REPEAT
40 PRINTAB(10,10);
ADVAL(1)/256;SPC(5)
50 UNTIL FALSE
```

You should be able to vary the number shown on the screen by varying the intensity of the light shining on the LDR. A bright window, electric light or torch can be the light source. Wave your hand between the light source and the LDR and watch what happens – you should see a slight variation in the output.

You should find that the LDR is sensitive to light falling on it from quite a wide angle. Figure IV shows how you can make it sensitive to direction – simply wrap a piece of card round to prevent stray light falling on it.

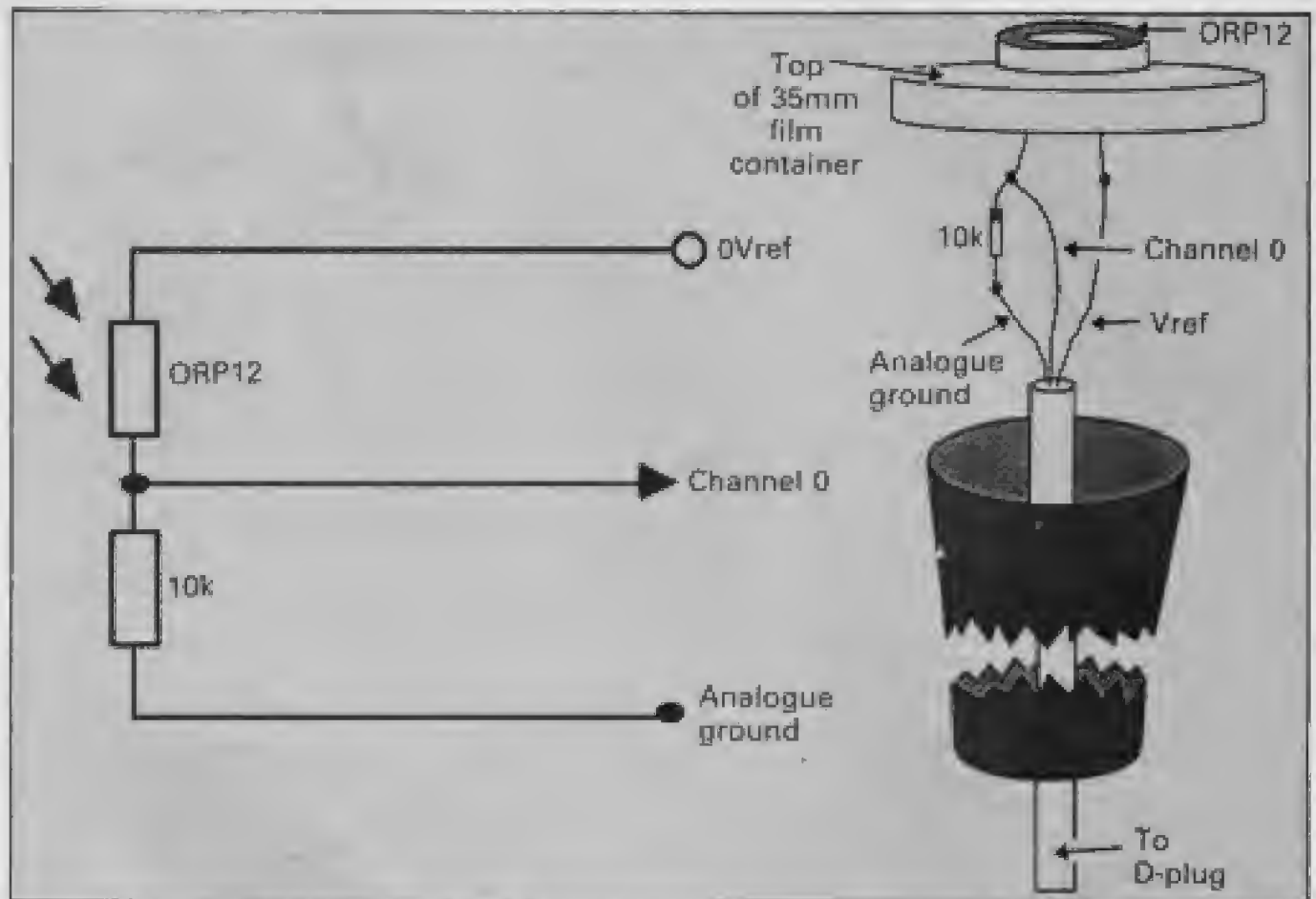


Figure IV: A simple circuit using a light dependent resistor

You can also put a lens in the front to increase its sensitivity, but that's more complex than it sounds and is beyond the scope of this article.

Once you've constructed a circuit like this it can be used for many different applications. For instance, I built one to count the number of times a model train went round a circle of track. A trivial task really but, it does show how flexible LDR circuits are.

There are many such counting applications, from the number of times a door is opened to a simple burglar alarm. Or, how about a sunshine recorder – put an LDR sensor where it will get maximum sunlight and program your Electron

to take a reading every 10 minutes or so. The resulting figures can be printed or stored on disc or tape for later reference.

Moving on now, though not changing the topic entirely, a similar component to the LDR is the thermistor – a heat sensitive component. The resistance of a thermistor depends on its temperature, so it can be used to measure or detect changes in temperature.

There are two main groups of thermistors: Positive Temperature Coefficient (PTC) and Negative Temperature Coefficient (NTC).

PTC thermistors resistance increases as the temperature rises while, NTC thermistors' resistance increases as it falls.

We'll be using a thermistor called the VA1055S – shown in Figure VI along with a suitable circuit for using it. Its resistance is 15,000 ohms at 25 degrees Celsius but drops to just a few hundred ohms at 150 degrees.

It's an NTC type thermistor and Rapid Electronics (Tel. 0206 272730) can supply them by mail order for less than £1. It's part number 61-0100 in their catalogue.

You can employ the same program we used with the LDR. Try it and see what sort of readings you can obtain.

The thermistor isn't a terribly sensitive transducer and it's not too good at detecting small temperature changes. There are other devices that are more suitable for such applications.

If you wish to use it to measure liquid temperature, for instance a cup of coffee, you'll have to ensure that the thermistor leads don't get wet as this would change its resistance. Figure VII shows how one can be enclosed within a test tube.

We've been beaver away with hardware for quite a while now so, let's develop our software. We've already seen in an

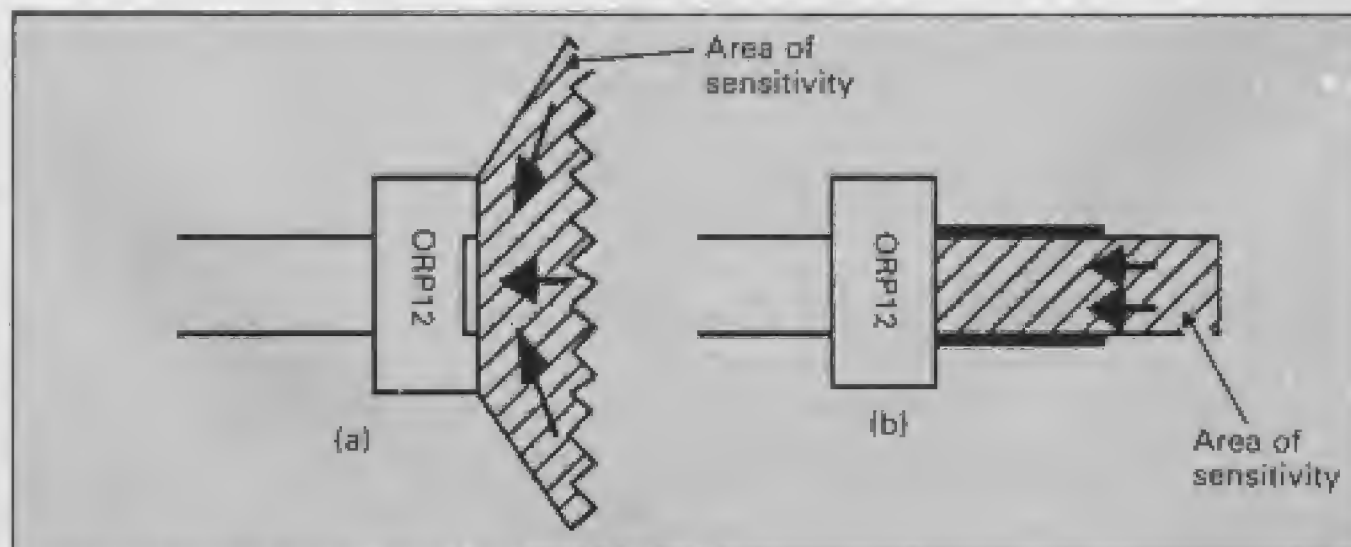


Figure V: Making the LDR sensitive to light direction



# Hardware Projects

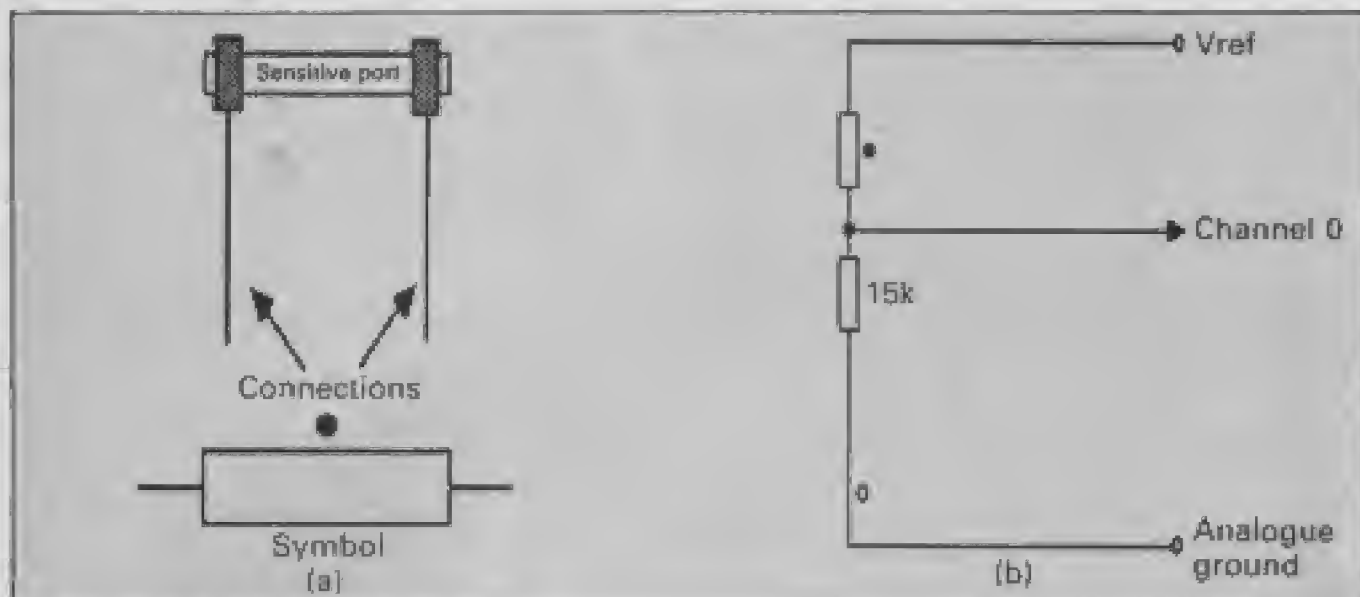


Figure VI: Using a thermistor

## From Page 59

earlier article that each analogue channel takes 10mS to convert. With four channels each one is converted once every 40mS. However, this isn't as fast as it sounds.

There are a couple of FX calls that enable us to

change the speed of conversions.

\*FX16,n allows us to turn off ADC channels that we're not using.

So, if all the channels but one were switched off, the remaining channel would be converted every 10mS – four times faster than normal. A value of  $n=1$

reads channel 0 only,  $n=2$  reads channel 0 and 1,  $n=3$  reads channels 0,1 and 2 and  $n=4$  reads all of them.

\*FX190,n allows us to speed up the conversion time from 10mS to around 5 or 6mS. We do, however, lose a little accuracy. A value of  $n=0$  is the standard conversion speed, and

\*FX190,8 is the fast version.

● Next month's article will be software oriented. Our programs will use these two FX calls to allow you to draw graphs of analogue inputs on the screen. I'll also be mentioning some of the pitfalls that you may encounter when writing software to read the ADC.

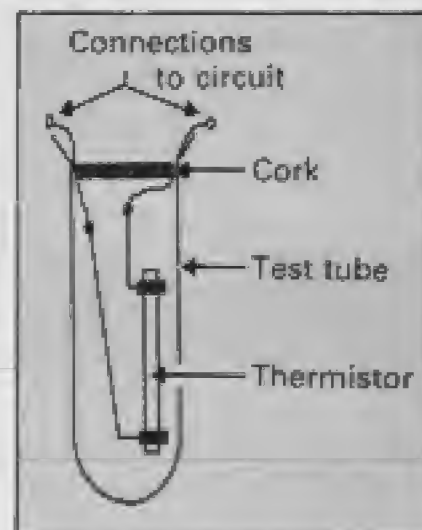


Figure VII: Using a thermistor to measure the temperature of liquids

TWO WAYS TO ENSURE  
YOU GET

**electron**  
user

EVERY MONTH

1. Complete and mail subscription form on Page 53
2. Hand this form to your newsagent.

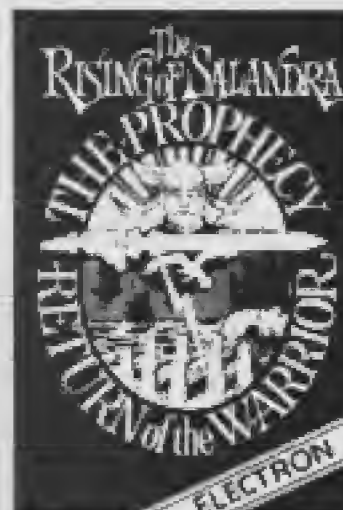
Please reserve me a copy of Electron User magazine every month until further notice.

- ☐ I will collect  
☐ I would like it delivered to my home.

Name \_\_\_\_\_

Address \_\_\_\_\_

Note to newsagents: Electron User should be obtainable from your local wholesaler, or contact Frank Everett, Circulation Manager on 0424 430422



**LARSOFT ADVENTURE GAMES**

## TWO PART ADVENTURE 'The Prophecy'

You are the chosen one who must locate the immortal warrior Thrull and enlist his help to overcome the evil forces of the Dark Lord Salandra. You need to find just three objects before you embark on part 2:-

### 'Return of the Warrior'

Now you have awoken Thrull you must seek direct confrontation with Salandra himself.

*'Highly Recommended'*  
Paul Gardener (Merlin)

**£4.95**  
inc. Postage & Packing

4 Chantry Road  
Clifton  
Bristol BS8 2QD

## BBC/ELECTRON 'IMAGE' V.2

'IMAGE' was the ultimate tape back up system  
now, it's even better

You can be completely assured that this is the best and most able program of its type available. It can deal with:

- Locked programs
- Programs of any length
- 300T and 1200 BAUD
- Files
- Y's (Ctrl codes) in filename
- Multiple back ups
- False or trick block info.
- Changing filename†
- Continuous data stream†
- Locking and unlocking programs

It is VERY IMPORTANT (INDEED purchasers take note that 'IMAGE' is for sale strictly for making BACK-UPS of your own software for your own use, for protecting your own programs, or as an aid to putting software on disk. Any person found using the program for illegal purposes runs the risk of being prosecuted.

To receive your copy of 'Image', send a cheque or P.O. for the sum of  
An Astounding £5.80 to:

**Peter Donn, Dept. EU, 18 Tyrone Road,  
Thorpe Bay, Essex SS1 3HF**

Please state BBC or Electron version. V.1 owners can obtain V.2 by sending £1.50 + V.1  
AA269 without case †BBC version only



# The Acornsoft Hits

## Volumes 1 & 2



These Acornsoft Hits compilation packages are the results of the recently announced venture between Superior Software and Acornsoft. The games have been carefully chosen to offer a balanced selection of the very best of Acornsoft's classic titles . . . at a price that is simply stunning value-for-money.

### Acornsoft Hits Volume 1

**Magic Mushrooms** "What's magic about Magic Mushrooms? A lot. It's great stuff; go and buy it — you won't be disappointed." . . . Acorn User.

**Planetoid** "It's fast and fun, annoying and addictive. In fact, it's one of the classic micro arcade games." . . . Electron User.

**Maze** "Maze has certainly become my favourite pastime for the moment, and I'm sure I'll be playing it for some time to come." . . . Acorn User.

**Rocket Raid** A superb sideways-scrolling arcade style game. You must fly your spaceship through the planetary caverns wherein are deadly aliens, guided missiles meteor storms and many other hazards.

### Acornsoft Hits Volume 2

**Starship Command** Command a starship against the attacking aliens in this demanding high-resolution graphics game. Your ship is equipped with shields, long and short-range scanners and a sector display of the stars and alien ships.

**Arcadians** Watch out for the deadly dive-bombing tactics of the Arcadians as they fly in convoy overhead. 1-player and 2-player options, intriguing music and a demonstration mode are some of the features of this excellent game.

**Meteors** Steer your laser-ship through a hail of meteors, smashing them with your laser bolts as they hurtle towards you on all sides. Avoid being hit by missiles from the flying saucers. The hyperspace escape facility is available as a last resort.

**Labyrinth** Guide Mark through the labyrinth, eating fruit to replenish his dwindling energy supply. Crush the Tiger Moths, shoot the Filterbugs and dodge the Threshers as you venture towards the magic crystals.

#### Acornsoft Hits Volume 1

Acorn Electron dual cassette .....£9.95  
BBC Micro dual cassette .....£9.95  
BBC Micro 5¼" disc .....£11.95  
BBC Master Compact 3½" disc £14.95

#### Acorn Electron Versions

Rocket Raid and Labyrinth are not available for the Acorn Electron.  
The Acornsoft Hits Volume 1 features:  
Magic Mushrooms, Planetoid, Maze, Monsters.  
The Acornsoft Hits Volume 2 features:  
Starship Command, Arcadians, Meteors, Snooker.

#### Acornsoft Hits Volume 2

Acorn Electron dual cassette .....£9.95  
BBC Micro dual cassette .....£9.95  
BBC Micro 5¼" disc .....£11.95  
BBC Master Compact 3½" disc £14.95

The BBC Micro versions are compatible with the BBC B, B+ and Master Series computers.



ACORNSOFT

Please make  
all cheques  
payable to  
"Superior  
Software Ltd"



24 HOUR TELEPHONE  
ANSWERING SERVICE FOR ORDERS

#### OUR GUARANTEE

- All mail orders are despatched within 24 hours by first-class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately.

Dept. AH4, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone: 0532 459453.



# Use your micro to speed up your mail . .



## and next-day delivery is guaranteed!

Everyone knows that "first class" mail is far from perfect. The Consumers' Association reported in June that two out of every five first class letters fail to be delivered the day after they are posted.

So if you have an urgent letter that just HAS to be delivered tomorrow, what do you do?

If you have a home or business computer the answer is at your fingertips.

You compose the letter on your computer. Then, in a simple operation that takes only a few seconds, you send it down the telephone line to MicroLink, the electronic mail service operated in association with Telecom Gold.

That's the end of your part in the story. From now on electronics take over. Your letter is fed automatically into the national British Telecom Telemessage service. It's switched to the delivery office nearest the recipient's address, where it's printed out on a letter-quality printer and put into a distinctive yellow envelope. And providing it was sent any time up to 8pm, it is delivered by the local postman by breakfast time the next day. Exactly as you'd typed it out the day before.

And how much does this ultra-fast service cost? From just £1.25 to send a letter of up to 350 words to any address in the UK (and an extra £1.70 to any address in the USA). You can also have it accompanied by a colourful greetings card (choose from 16 different varieties) for another 65p.

Telemessages is just one of many services offered by MicroLink that are designed to speed up communications. Find out more by returning the coupon below.

**Please send me more information about your speedy Telemessage service and other aspects of MicroLink.**

Name \_\_\_\_\_

Address \_\_\_\_\_



Send to: MicroLink,  
Europa House, 68 Chester Road,  
Hazel Grove, Stockport SK7 5NY.

EUS

## ADVERTISERS' INDEX

21st Software .....	38	Larsoft .....	60
Advanced Computer Products.....	8, 9	Midcomm Int.....	62
Andyk .....	60	Mithras Software .....	54
Argus Press .....	2	PMS .....	57
C & F Associates .....	30	Project Expansions .....	62
Peter Donn .....	60	Qualsoft .....	22
E.C.L. ....	46	Slogger .....	14, 15
Epic Software .....	4	Software Bargains .....	7
First Byte Computers .....	54	Superior Software .....	23, 63, 64
Incentive Software .....	61	Voltmace .....	37
Kosmos Software .....	57	Wigmore House .....	57

## USER PORT

AND NOW AVAILABLE A VIDEO DIGITISER FOR USE ON THE ELECTRON!

We can now offer a combination package of the 'Watford' video digitiser with our user port at a special introductory price. The digitiser will enable you to 'Capture' pictures via the video output socket or your VCR, TV, CAMERA, etc. These will instantly be displayed on the monitor, and can be saved to disc/cassette or dumped to a printer. (Epson Compatible) Operates in modes 0, 1, or 2 SAE For further details.

### Prices

User Port & Video Digitiser (Software on Rom)	£134.95
User Port & Art Software (cassette)	£28.95
User Port only (For your own applications)	£25.00

Prices inclusive of P&P, etc

Also 5% off Recommended price of Slogger Products.

## PROJECTExpansions

5 TEAL CLOSE, FAREHAM, HAMPSHIRE PO16 8HG  
Tel: 0329 221109

MIDCOMM  
INTERNATIONAL

## COMPUTER REPAIRS

### Communications and Computer Specialists

Midcomm International Ltd is a company that specialises in computer repairs and can offer you the following 5 STAR service.

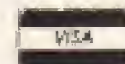
- ★ Repairs carried out to manufacturers requirements, using the most up to date diagnostic and test equipment available
- ★ Skilled technical staff
- ★ Modern customised workshops
- ★ 4 hour soak test on each repair.
- ★ All repairs guaranteed.

For a fast, efficient, reliable and professional service, call with or send your computer together with a brief description of fault to:

(If the computer is to be sent by mail please insure it at the Post Office)

Midcomm International Ltd,  
Unit F, Birch Industrial Estate,  
Whittle Lane, Birch, Heywood,  
Lancashire OL10 2RB.

Telephone: 0706 625 166



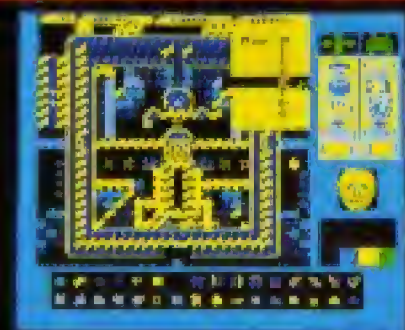


For the COMMODORE, AMSTRAD, BBC MICRO, ELECTRON

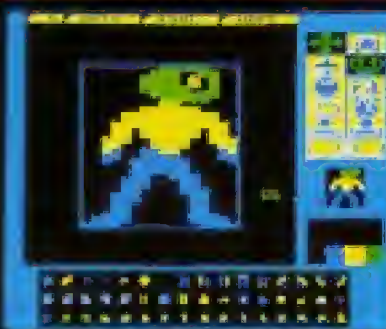
# REPTON

THE ULTIMATE CHALLENGE

# 3



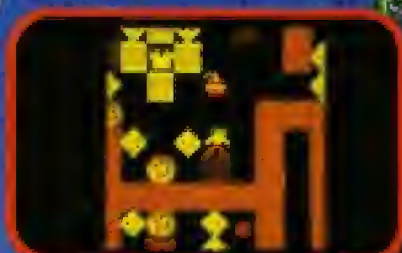
The Screen Editor.



The Character Editor.



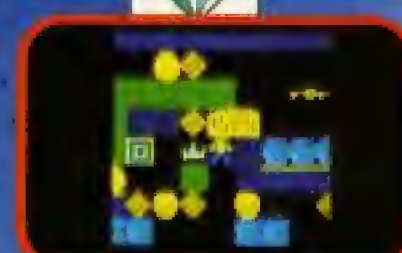
Being pursued  
by a Monster



The Time Bomb  
is located



The Poisonous Fungus  
grows insidiously



Collecting a  
Golden Crown

## Are you ready for the ultimate challenge?

Our original Repton game was immediately acclaimed as a refreshingly new concept: a game requiring dexterity to complete its arcade-style elements, and clear logical thinking to solve its strategic puzzles. Repton involves retrieving treasure from cleverly-constructed traps of falling rocks whilst avoiding the fearsome monsters and haunting spirits. "This is an astounding game reaching new heights in BBC arcade adventures," enthused the Micro User magazine.

Last Christmas saw the release of Repton 2, larger and much more challenging than before. Acorn User's Technical Editor Bruce Smith wrote: "Repton 2 is better than anything I've played on the BBC Micro or Electron. Brilliant!"

Now, completely rewritten and improved for the Commodore, Amstrad, BBC Micro and Electron, we proudly present Repton 3. For the first time, a screen-designer is included: try to devise screens that will perplex your friends, then see if you can solve their newly-designed screens. Another innovation is the character-designer which enables you to design your own monsters, rocks, eggs, spirits, diamonds... any or all of the game's characters can be redefined as you wish.

Repton 3 is much larger than its predecessors — it has 24 fascinating screens, and players who are skilful enough to complete them all can enter our prize competition described below. All the favourite Repton characters have been retained, together with several new features: a creeping poisonous fungus which grows at an alarming rate; time bombs and time capsules (for puzzles in the 4th dimension); and golden crowns as well-deserved rewards for your endeavours. **Can YOU complete Repton 3?**

### PRIZE COMPETITION

If you complete Repton 3, you can enter our competition. Prizes include over £200 in cash, with T-shirts, mugs, badges and pens for runners-up.

COMMODORE 64H28 • AMSTRAD CPC 464/664/6128  
BBC MICROS: B, B+, MASTER, MASTER COMPACT • ELECTRON

Commodore Cassette.....	£9.95	BBC Micro Cassette.....	£9.95
Commodore Disc.....	£11.95	BBC Micro Disc.....	£11.95
Amstrad Cassette.....	£9.95	Master Compact Disc.....	£14.95
Amstrad Disc.....	£14.95	Electron Cassette.....	£9.95

**SUPERIOR  
SOFTWARE**  
Limited

**ACORNSOFT**

The screen pictures  
above show the  
BBC Micro version of  
Repton 3.



24 HOUR TELEPHONE  
ANSWERING SERVICE FOR ORDERS

### OUR GUARANTEE

- All mail orders are despatched within 24 hours by first-class post.
- Postage and packing is free.
- Faulty cassettes and discs will be replaced immediately.

Dept. R9, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone: 0532 459453.



# The Superior Collection

## Volume 3

For the  
Acorn Electron

NEW  
RELEASE



SYNCRON

Voted  
COMPUTER  
GAMES'S BBC  
MICRO GAME  
OF THE  
YEAR 1985



REPTON



REPTON 2



KARATE COMBAT



DEATHSTAR



MR. WIZ



SMASH AND GRAB



OVERDRIVE

## A New Concept in Compilations

The **Superior Collection Volume 3** features one brand new game, Synchron, together with 7 of Superior Software's classic hits for the Acorn Electron.

**Synchron** is a fast-action game set against a backdrop of an enormous graphically-detailed scrolling landscape. The landscape is, in total, 1024 times the size of the screen. You must endeavour to complete 16 hair-raising missions; in each mission you have to collect a number of power cylinders, land your spacecraft on a runway with each cylinder in turn, and finally locate and bomb the HQ Building. Whilst skilfully manoeuvring your spacecraft between the defence pylons and force-fields, you are attacked by alien spacecraft and missiles launched from the land bases. A superb game, worth at least £7.95 in its own right.

Here's what the computer press said about some of the other titles on this compilation package:—

**REPTON:** "This is an astounding game reaching new heights in Electron arcade adventures." . . . ELECTRON USER

**REPTON 2:** "Repton 2 is better than anything I've played on the BBC Micro or Electron. Brilliant!" . . . ACORN USER

**DEATHSTAR:** "Deathstar is a super fast, all action arcade classic. It's the sort of game that you can't put down . . . The graphics are excellent and the scrolling is very smooth in all four directions. The pace is fast and furious even on the starting screen. This action packed game is recommended for all arcade gamers." . . . ELECTRON USER

**SMASH AND GRAB:** "As usual with Superior products the graphics are excellent, with a good use of colour and no flicker. I expect this game will have you rolling with laughter. I certainly did.

Instructions	95%
Playability	95%
Graphics	100%
Value For Money	100%
. . . HOME COMPUTING WEEKLY	

Awarded  
★★★★★  
(Top Rating!)

Acorn Electron dual cassette .....	£9.95
Acorn Electron 3½" disc .....	£14.95

Now available on 3½" disc for the Acorn Electron — due to public demand.

**SUPERIOR  
SOFTWARE**  
Limited

Dept. SC83, Regent House, Skinner Lane, Leeds LS7 1AX. Telephone: 0532 459453.

Please make  
all cheques  
payable to  
"Superior  
Software Ltd"



**OUR GUARANTEE**  
• All mail orders are despatched  
within 24 hours by first-class post  
• Postage and packing is free.  
• Faulty cassettes and discs will be  
replaced immediately

24 HOUR TELEPHONE  
ANSWERING SERVICE FOR ORDERS